Vol. 997 Number 4

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

August 26, 1980

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

U.S.
DEPARTMENT
OF COMMERCE

Patent
and
Trademark
Office

OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE

August 26, 1980 Volume 997 Number 4

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	997 OG 24
Microorganisms-Patentable Subject Matter	997 OG 24
Performance Review Board	997 OG 24
Set XV of Addenda to the Classification Definitions	997 OG 24
April-June 1980 Classification Orders	997 OG 24
Patent Suits	997 OG 25
Reissue Applications Filed	997 OG 26
Patent Certificates of Correction	997 OG 28
Disclaimers	997 OG 28
Disclaimers and Dedications	997 OG 28
National Technical Information Service	997 OG 28
Reference Collections of U.S. Patents	997 OG 30
Condition of Patent Applications	997 OG 31
Reissue Patents Granted (30,380)	1157
Plant Patents Granted (4,589)	1161
Patents Granted	
General and Mechanical (4,218,777)	1163
Chemical (4,219,332)	1353
Electrical (4,219,692)	1451
Design Patents Granted (256,512)	1521
Index of Patentees	PI 1
Indices of Reissue, Design and Plant Patentees	PI 39
Classification of	
Patents (Including Reissues)	PI 43
Design and Plants	PI 45
Georgraphical Index of Residence of Inventors	
Patents (Including Reissues)	PI 46
Design and Plants	PI 47
Change of Address Form and Subscription Order Form	Back Page

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENTS SECTION), issued weekly, subscription $300.00 per annum for first-class mailing, also available as fourth-class mail at $200.00; foreign first-class mailing rates will be furnished upon request; single copies each, $4.00 domestic, $5.00 foreign.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly, subscription $88.40 per annum, foreign mailing $22.10 additional; single copies $1.70 each.

GENERAL INFORMATION concerning TRADEMARKS, price $1.50 each.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at 50 cents each; PLANT PATENTS in color, $1.00 each; copies of TRADEMARKS AND DESIGN PATENTS at 20 cents each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of July 15, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

Transmittal fee	$35.00
Search fee	300.00
Basic fee (first 30 pages)	190.00
Basic fee supplement (each sheet over 30)	3.50
Designation fee	45.00

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

June 17, 1980.

Microorganisms–Patentable Subject Matter

The decision of the Supreme Court in *Diamond* v. *Chakrabarty* (206 U.S.P.Q. 193) held that microorganisms produced by genetic engineering are not excluded from patent protection by 35 U.S.C. § 101. It is clear from the Supreme Court decision that the question of whether or not an invention embraces living matter is irrelevant to the issue of patentability.

Accordingly, the Patent and Trademark Office is now examining patent applications including claims to microorganisms which had been under suspension. Assuming that the products involved were the result of human intervention and were not products of nature, such claims will not be rejected under 35 U.S.C. § 101 as directed to unpatentable subject matter.

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

Date: July 29, 1980.

Performance Review Board

The membership of the Patent and Trademark Office's Performance Review Board, announced in the Federal Register of February 6, 1980 (45 FR 8083), has changed. The change is as follows:

James R. Wright, National Bureau of Standards, Washington, D.C. 20234, replaces Richard P. Bartlett, Jr., Director of Administrative and Information Systems, National Bureau of Standards, Washington, D.C. 20234, as outside member for the balance of Mr. Bartlett's one-year term on the Board.

RENE D. TEGTMEYER,
Acting Commissioner of Patents and Trademarks.

Dated: July 30, 1980.

Set XV of Addenda to the Classification Definitions

The definitions of the classes listed below were modified by addenda as part of Classification Orders issued between January and March 31, 1980. All of these addenda have been consolidated as Set XV of "Addenda to the Classification Definitions."

Class	Class	Class	Class	Class	Class
5	108	182	252	328	362
14	109	185	258	329	363
29	113	186	264	330	364
33	116	187	269	331	365
34	118	191	273	332	366
35	119	193	274	333	367
40	122	198	277	334	368
43	123	200	280	335	370
46	124	206	284	336	371
49	128	212	307	338	375
52	131	220	308	339	414
55	133	221	310	340	416
58	136	222	312	343	427
60	137	224	314	346	428
63	141	235	315	350	429
73	156	242	318	353	430
74	174	244	320	354	431
84	175	246	322	356	433
89	178	248	323	358	455
99	179	250	324	360	
102	180	251	325	361	

Newly established classes issued between October 1979 and March 1980: D26, 368, 370, 371, 375, 410, 430, 433, and 455.

ALFRED C. MARMOR,
Administrator for Documentation,
July 22, 1980.

April–June 1980 Classification Orders

The reclassifications covered by the classification changes below became effective between April and June 1980. Beginning September 1980, the changes will be printed monthly. Addenda information will continue to be printed quarterly.

	Class	*Subclasses*
Classification Order 726, effective April 1, 1980:		
Abolished	156	306–309.
Established	156	306.3; 306.6; 306.9; 307.1; 307.3; 307.5; 307.7; 308.2; 308.4; 308.6; 308.8; 309.3; 309.6; 309.9; 324.4.
Title changes	156	155; 281; 313.
Classification Order 727, effective April 1, 1980:		
Abolished	104	147–153.
Established	104	117.1; 130.1; 281–305.
Position changes	104	162; 163.
Indent change	104	164.
Classification Order 728, effective April 8, 1980:		
Abolished	280	11.37–11.39.
Established	280	809–826.
Classification Order 729, effective April 14, 1980:		
Abolished	260	448.2; 448.8.
Established	(New)*556	400–489.
Classification Order 730, effective April 15, 1980:		
Abolished	152	379.1; 379.2; 381.1; 381.2.
Established	152	379.3–379.5; 381.3–381.6.
Classification Order 731, effective April 15, 1980:		
Abolished	248	311.1.
Established	248	311.2; 312.1.
Classification Order 732, effective May 21, 1980:		
Abolished	8	1–8; 10–54.2; 162–180; 62–94; 95–100; 134; Digest 7.
Established	8	400–412; 414–416; 421; 423–426; 428; 429; 431–433; 435–655; 657–659; Cross-Reference Art Collections: 900–939.
Classification Order 733, effective May 29, 1980:		
Abolished	260	588.5; 586; 588–606; 606.5; 607–609; 644–647.
Established	260	550.
	568	1–74; 300–497; 924–949.
Title changes	568	578; 579; 581; 582; 584; 592; 596; 599; 602; 607; 616; 618; 622; 626; 638; 646; 650; 654; 673; 675; 678; 685–689; 697; 698; 700–702; 705; 706; 715; 716; 730; 763; 770; 796; 799; 801; 811; 813; 825; 828; 829; 831; 832; 837; 843–845; 849; 851.

	Class	Subclasses
Classification Order 726, effective April 1, 1980:		
Abolished	156	306–309.
Established	156	306.3; 306.6; 306.9; 307.1; 307.3; 307.5; 307.7; 308.2; 308.4; 308.6; 308.8; 309.3; 309.6; 309.9; 324.4.
Title changes	156	155; 281; 313.
Classification Order 727, effective April 1, 1980:		
Abolished	104	147–153.
Established	104	117.1; 130.1; 281–305.
Position changes	104	162; 163.
Indent change	104	164.
Classification Order 728, effective April 8, 1980:		
Abolished	280	11.37–11.39.
Established	280	800–826.
Classification Order 729, effective April 14, 1980:		
Abolished	260	448.2; 448.8.
Established	(New)*556	400–489.
Classification Order 730, effective April 15, 1980:		
Abolished	152	379.1; 379.2; 381.1; 381.2.
Established	152	379.3–379.5; 381.3–381.6.
Classification Order 731, effective April 15, 1980:		
Abolished	248	311.1.
Established	248	311.2; 312.1.
Classification Order 732, effective May 21, 1980:		
Abolished	8	1–8; 10–54.2; 162–180; 62–94; 95–100; 134; Digest 7.
Established	8	400–412; 414–416; 421; 423–426; 428; 429; 431–433; 435–655; 657–659; Cross-Reference Art Collections: 900–939.
Classification Order 733, effective May 29, 1980:		
Abolished	260	588.5; 586; 588–606; 606.5; 607–609; 644–647.
Established	260	550.
	568	1–74; 300–407; 924–949.
Title changes	568	578; 579; 581; 582; 584; 592; 596; 599; 602; 607; 616; 618; 622; 626; 638; 646; 650; 654; 673; 675; 678; 685–689; 697; 698; 700–702; 705; 706; 715; 716; 739; 763; 770; 796; 799; 801; 811; 813; 825; 828; 829; 831; 832; 837; 843–845; 849; 851.
Classification Order 734, effective June 3, 1980:		
Abolished	427	126.
Established	427	126.1–126.6.
Classification Order 735, effective June 3, 1980:		
Abolished	206	137.
Established	206	210–224.
Classification Order 736, effective June 3, 1980:		
Abolished	156	304.
Established	156	304.1–304.7.
Classification Order 737, effective June 11, 1980:		
Abolished	4	1–7; 9; 111; 112–114; 115–144; 145; 190.
Established	4	300.1–300.3; 420.1–420.5; 443–606.
Indent Changes	4	300–420; 111.1–111.6; 114.1; 144.1–144.4.
Classification Order 738, effective June 26, 1980.		
Established	128	Cross-Reference Art Collections: 911–914.

*Newly established Class 556 Definitions separately available.

ALFRED C. MARMOR,
Administrator for Documentation,
July 22, 1980.

Patent Suits

Notices under 35 USC 290; Patent Act of 1952

3,255,778, Orel L. Rosebrook, SERVO VALVE MECHANISM; **3,390,859,** Roy Rosebrook, Sr., TRACER CONTROL VALVE ASSEMBLY, **filed** June 13, 1980, D.C., C.D. Calif. (Los Angeles), Doc. 80–02526 AAH, *Schneebeck's Industries, Inc.* v. *Aerotrace Hydraulics, Inc.*

3,390,859. (See 3,255,778.)

3,415,552, Howlett Machine Works, SPLICING METALLIC REINFORCING RODS WITH A THREADED COUPLING SLEEVE, **filed** June 25, 1980, D.C., N.D. Ohio (Cleveland), Doc. C–80–1077, *Howlett Machine Works* v. *Erico Products, Inc.*

3,498,311, Roland J. Hawes, Jr., APPARATUS FOR DISPENSING AND DELIVERING FEED ADDITIVES TO LIVESTOCK AND POULTRY; **3,670,923,** same, CONTROL SYSTEM FOR MULTIPLE INGREDIENT DISPENSING APPARATUS; **3,822,056,** same, METHOD AND MEANS FOR ADDING SMALL MEASURED QUANTITIES OF SELECTED MATERIALS TO A LARGE CAPACITY MATERIAL-MIXING PLANT, **filed** Oct. 25, 1979, D.C., N.D. Tex. (Amarillo), Doc. CA–2–79–180, *Micro Chemical, Inc.* v. *Great Plains Chemical Company of Texas, Inc. et al.* **Same, filed** Jan. 15, 1980, D.C. Colo. (Denver), Doc. 80–W–63, *Great Plains Chemical Co., Inc.* v. *Micro Chemical, Inc.*

3,504,818, Northern Engineering & Plastics Corp., TAMPER PROOF BOTTLE CLOSURE, **filed** Oct. 27, 1978, D.C., W.D. Pa. (Pittsburgh), Doc. 78–1234, *Northern Engineering & Plastics Corp.* v. *Roger Eddy, doing business as Marshall Mfg. Co.* Judgment entered in favor of defendant and against plaintiff on June 26, 1980.

3,539,492, Mohawk Industries International, Inc., STENCIL CAP AND PROCESS OF MAKING, **filed** June 20, 1980, D.C., N.D. Ohio (Cleveland), Doc. C–80–1045, *Mohawk International, Inc.* v. *Modern Chem-Etch, Inc.*

3,555,593, Donald J. Scheier, METHOD OF EVISCERATING POULTRY; **3,653,093,** same, POULTRY EVISCERATING MACHINE, **filed** June 20, 1980, D.C., N.D. Ga. (Gainesville), Doc. 80–048G, *Simon-Johnson, Inc.* v. *Centennial Machine Company, Inc.*

3,606,921, Caterpillar Tractor Co., BELTED OVAL PNEUMATIC TUBE-TIRE; **3,773,394,** same, FLEXIBLE TRACK BELTS, **filed** Nov. 15, 1978, D.C., N.D. Ill. (Chicago), Doc. 78c4535, *Caterpillar Tractor Co.* v. *Goodyear Tire & Rubber Company.*

3,653,093. (See 3,555,593.)

3,670,923. (See 3,498,311.)

3,698,271, Preston Engravers, Inc., ADJUSTABLE AIR EJECT DIE-CUTTING ASSEMBLY, **filed** Oct. 29, 1979, D.C., N.D.N.Y. (Utica), Doc. 79–CV–689, *Preston Engravers, Inc.* v. *Rotoflex International Limited.* Stipulation of dismissal filed on May 19, 1980.

3,707,404, Carlson and Duquaine, PARTS WASHER AND METHOD OF SOLVENT CLEANING, **filed** June 13, 1980, D.C., N.D. Ill. (Chicago), Doc. 80c3033, *Wayne A. Carlson et al.* v. *Action Kleen Manufacturing Inc.*

3,721,051, H. H. Robertson Company, BOTTOMLESS SUBASSEMBLY FOR PRODUCING AN UNDERFLOOR ELECTRICAL CABLE TRENCH, **filed** July 8, 1980, D.C., N.D. Ohio (Cleveland), Doc. C–80–1166, *H. H. Robertson Co.* v. *Bargar Metal Fabricating Co.*

3,758,682, Diagnostic Data, PHARMACEUTICAL COMPOSITIONS COMPRISING ORGOTEIN AND THEIR USE; **3,773,929,** same, **filed** May 13, 1980, D.C., N.D. Calif. (San Francisco), Doc. C–80–1866 WHO, *Palolab Pharmaceuticals* v. *Diagnostic Data.*

3,773,394. (See 3,606,921.)

3,773,929. (See 3,758,682.)

3,822,056. (See 3,498,311.)

3,826,398, William C. Rivers, Jr., TRANSPORT CONTAINER, **filed** June 24, 1980, D.C., M.D. Fla. (Jacksonville), Doc. 80–588–CIV–J–B, *Bill Rivers Corporation* v. *Howard Johnson Company et al.*

3,828,760, Farber and Belinkoff, OVEN, **filed** May 16, 1980, D.C., W.D. Mo. (Kansas City), Doc. 80–0487–CV–W–3, *Rival Manufacturing Company* v. *Kidde Consumer Durables Corporation.*

3,833,704, W. Bar E, Inc., METHOD OF EXTRACTING A PLURAL LAYERED SHEET, **filed** June 5, 1980, D.C., N.D. Ill. (Chicago), Doc. 80c2849, *W Bar E, Inc.* v. *HPM Corp.*

3,866,648, Microseal Corp., MICROFILM COPY JACKET, **filed** Dec. 28, 1977, D.C., E.D. Pa. (Philadelphia), Doc. 77–4409, *Microseal Corporation* v. *Motion Technology Corporation.* Judgment is entered in favor of defendant and against plaintiff. Patent No. 3,866,648 is invalid and declared null and void. Order dated Apr. 24, 1980.

3,912,083, Jarke Corporation, MODULAR STORAGE FRAME FOR FLAT SHEET MATERIALS, **filed** June 4, 1980, D.C., N.D. Ill. (Chicago), Doc. 80c2831, *Jarke Corporation* v. *Myers Trucking & Castor Co.*

3,915,362, Donald G. Hart, VEHICLE LUGGAGE CARRIER AND COMPLEMENTARY MOUNTING MEMBERS; **D. 235,428,** same, CAR TOP LUGGAGE CARRIER, **filed** Sept. 16, 1976, D.C., N.D. Iowa (Cedar Rapids), Doc. C–76–3035, *Donald G. Hart and Creataform, Ltd.* v. *Winnebago Industries, Inc.* Stipulation of dismissal filed Oct. 1, 1979.

3,959,915, John S. Kettlestrings, PROPELLED DISK COPTER TOY, **filed** Jan. 18, 1979, D.C., N.D. Ill. (Chicago), Doc. 79c186, *Sunmark, Inc.* v. *John S. Kettlestrings.* Order dated June 5, 1980. Pre-trial conference held. Cause dismissed. Draft order to follow.

3,964,373, Christen Incorporated, PAPER LOG ROLLER; **D. 237,141,** same, **filed** Dec. 26, 1979, D.C., C.D. Ill. (Peoria), Doc. 79–1181, *Christen Incorporated* v. *Peoria Suppliers.* Defendant permanently enjoined after June 1, 1980 from infringing U.S. Patent No. 3,964,373 and Design Patent No. 237,141 as per consent judgment filed June 4, 1980.

3,964,858, Norman J. Marik, AUTOMATIC CANDLE-WICKING MACHINE, **filed** May 20, 1980, D.C., W.D. Tenn. (Jackson), Doc. 80–1058, *Norman J. Marik* v. *Henco, Inc.*

3,966,396, Bruce Howes, TEXTILE PRINTING PROCESS AND TRANSFER MEDIUM, **filed** June 21, 1978, D.C.N.J. (Newark), Doc. 78–1364, *Bruce Howes* v. *Einson-Freeman and Detroy Corporation.* Permanent injunction filed June 12, 1980.

3,971,656, Erwin Rudy, SPINODAL CARBONITRIDE ALLOYS FOR TOOL AND WEAR APPLICATIONS, **filed** May 21, 1980, D.C., N.D. Tex. (Dallas), Doc. CA–3–80–0618–F, *Teledyne Industries, Inc.* v. *Kyocera International, Inc. et al.*

4,004,295, Robert M. Byrnes, Sr., PROTECTIVE GLOVE CONSTRUCTED OF FLEXIBLE STRANDS OF METAL WIRE AND FIBER YARN, **filed** Mar. 10, 1980, D.C., N.D. Ohio (Cleveland) Doc. C–80–342, *Robert M. Byrnes, Sr.* v. *Safety First Industries, Inc.* Defendant is permanently enjoined from infringing plaintiff's patent. June 3, 1980.

4,011,962, Ethyl Products Co., TWO PIECE CLOSURE FOR CONTAINERS, **filed** June 27, 1980, D.C. Del. (Wilmington), Doc. 80–316, *Ethyl Products Co.* v. *Risdon Corporation.*

4,055,773, Precision Monolithics Inc., MULTISTAGE ELECTRICAL LADDER FOR DECREMENTING A SIGNAL INTO A PLURALITY OF WEIGHTED SIGNALS; **4,056,740,** same, DIFFERENTIAL INPUT-DIFFERENTIAL OUTPUT TRANSISTOR SWITCHING CELL; **4,092,639,** same, DIGITAL TO ANALOG CONVERTER WITH COMPLEMENTARY TRUE CURRENT OUTPUTS, **filed** June 20, 1980, D.C., N.D. Calif. (San Francisco), Doc. C–80–2582 WHO, *Advanced Micro Devices* v. *Precision Monolithics Inc.*

4,056,740. (See 4,055,773.)

4,060,277, Roger K. Leib, MODULAR FURNITURE, **filed** Apr. 25, 1980, D.C., C.D. Calif. (Los Angeles), Doc. 80–01723 WMB, *Roger K. Leib* v. *Metropolitan Furniture Corporation.*

4,074,311, Tanner Electronic Systems, TELEVISION SECURITY SYSTEM, **filed** Nov. 27, 1979, D.C., N.D.N.Y. (Utica), Doc. 79–CV–773, *Eagle Comtronics, Inc.* v. *Tanner Electronic Systems Technology, Inc.*

4,092,451, Virginville Patents, Inc., EMBROIDERY TRANSFER; **4,140,563,** same, METHOD OF MAKING EMBROIDERY TRANSFER, **filed** Apr. 16, 1979, D.C.N.J. (Newark), Doc. 79–1095, *Virginville Patents, Inc.* v. *Swiss Maid Emblems et al.* Judgment in favor of plaintiff filed June 10, 1980. **Same, filed** June 12, 1980, D.C., E.D. Pa. (Philadelphia), Doc. 80–2290, *Joy Insignia, Inc.* v. *Virginville Patents, Inc.*

4,092,639. (See 4,055,773.)

4,126,145, Raymond Boyd, LIGHTED COMPACT, **filed** Nov. 28, 1979, D.C.N.J. (Camden), Doc. 79–3411, *Raymond Boyd* v. *Strawbridge & Clothier.* Stipulation of dismissal without prejudice filed May 7, 1980.

4,133,247, Austin Powder Co., CARRIER FOR EXPLOSIVE PRIMER AND METHOD OF USING SAME; **4,141,296,** same, **filed** June 12, 1980, D.C. Del. (Wilmington), Doc. 80–292, *Austin Powder Company* v. *Atlas Powder Company.*

4,140,563. (See 4,092,451.)

4,141,296. (See 4,133,247.)

4,151,575, Maurice A. Hogue, MOTOR PROTECTIVE DEVICE, **filed** Feb. 5, 1980, D.C., N.D. Tex. (Dallas), Doc. CA–3–80–0149–F, *Esco Manufacturing Co.* v. *Maurice A. Hogue, doing business as Hesco Manufacturng Co.*

4,156,806, Raytheon Company, CONCENTRATED ENERGY MICROWAVE APPLIANCE; **4,158,760,** same, SEED HEATING MICROWAVE APPLIANCE, **filed** June 6, 1980, D.C., N.D. Ill. (Chicago), Doc. 80c2881, *Raytheon Company* v. *Republic Molding Corporation.*

4,158,760. (See 4,156,806.)

4,174,588, Quaker Oats Co., TOY BLOOD PRESSURE MONITORING DEVICE; **4,177,871,** same, TOY STETHOSCOPE; **D. 253,063,** same, TOY BLOOD PRESSURE TESTER, **filed** May 16, 1980, D.C., S.D.N.Y., Doc. 80–C–2848 PNL, *Fisher-Price Toys, a division of the Quaker Oats Co.* v. *Imco Toy Inc.*

4,176,591, Universal Power Systems, Inc., COOKING PAN FOR BAKING PIZZA PIES AND LIKE FOOD PRODUCTS, **filed** June 9, 1980, D.C., E.D. Ky. (Lexington), Doc. 80–22, *Universal Power Systems, Inc.* v. *Jerry Cowsert and Jerry Cowsert, doing business as Commercial Maintenance.*

4,177,871. (See 4,174,588.)

4,191,376, System Operations, Inc., HIGHLY SECURE PLAYING CARDS FOR INSTANT LOTTERY AND GAMES, **filed** June 4, 1980, D.C., E.D. Mich. (Detroit), Doc. 80–72068, *System Operations, Inc.* v. *Scientific Games Development Corp. et al.* **Same, filed** June 12, 1980, D.C.N.H. (Concord), Doc. 80–274, *Scientific Games Development Corporation (1973)* v. *Systems Operations, Inc.* **Same, filed** June 20, 1980, D.C.N.H. (Concord), Doc. 80–288, *Scientific Games Development Corporation (1973) et al.* v. *Systems Operations, Inc.*

4,194,544, Omark Industries, Inc., SPLITTING DEVICE, **filed** June 11, 1980, D.C.N.J. (Newark), Doc. 80–1685, *Omark Industries, Inc.* v. *Colonial Tool Company, Inc.*

D. 235,428. (See 3,915,362.)

D. 237,141. (See 3,964,373.)

D. 240,531, Kenneth W. Elkington, PORTABLE WATER PURIFIER, **filed** June 11, 1980, D.C., W.D. Tenn. (Memphis), Doc. C–80–2303–H, *Better Living Laboratories, Inc.* v. *Kenneth W. Elkington.*

D. 247,507, Robert G. Ramacher, Jr., STOVE, **filed** June 11, 1980, D.C. Minn. (St. Paul), Doc. 3–80–359, *Robert G. Ramacher, Jr. et al.* v. *SEF Corporation et al.*

D. 253,063. (See 4,174,588.)

D. 253,401, Carolina Enterprises, Inc. SIREN ATTACHMENT FOR CYCLE-TYPE VEHICLES; **Reg. No. 1,115,460** (SUPER SIREN), Carolina Enterprises, Inc., **filed** Jan. 8, 1980, D.C., S.D.N.Y., Doc. 80–C–122 GLG, *Carolina Enterprises Inc.* v. *Dorcy Cycle Corporation et al.* Action dismissed with prejudice on May 15, 1980.

PP 2,539, Frederic W. Anderson, PLUM TREE, **filed** Aug. 31, 1978, D.C., E.D. Calif. (Fresno), Doc. F–78–181 CIVIL. *Reedley Nursery, Inc.* v. *Frederick M. Richardson.* Judgment entered that plaintiff take nothing, defendant prevails and awarded costs on June 10, 1980.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,076,072, Re. S.N. 152,014, Filed May 21, 1980, Cl. 165/41, MODULAR HEAT EXCHANGER WITH PIVOTAL CORES, Erwin J. H. Bentz (Deceased), Owner of Record: *Caterpiller Tractor Co., Peoria, Ill.,* Attorney or Agent: Ralph E. Walters, Ex. Gp.: 345, Pub. Aug. 26, 1980

4,116,339, Re. S.N. 156,600, Filed Jun. 5, 1980, Cl. 209/699, SORTING SYSTEM AND APPARATUS, Robert G. Holmes, Owner of Record: *Ohio Agricultural Research and Development Center, Wooster, Ohio,* Attorney or Agent: Sidney W. Millard, Ex. Gp.: 311, Pub. Aug. 26, 1980

4,122,024, Re. S.N. 152,007, Filed May 21, 1980, Cl. 252/62 P, CLASSIFIED TONER MATERIALS, Lewis O. Jones, et al., Owner of Record: *Zerox Corporation, Stamford, Conn.*, Attorney or Agent: Harvey M. Brownrout, et al., Ex. Gp.: 166, Pub. Aug. 26, 1980

4,141,553, Re. S.N. 154,227, Filed May 29, 1980, Cl. 273/86 B, TOY VEHICLE GAME, James D. Moore, et al., Owner of Record: *Ideal Toy Corporation, Hollis, N.Y.*, Attorney or Agent: Richard M. Rabkin, Ex. Gp.: 334, Pub. Aug. 26, 1980

PATENT NOTICES

Certificates of Correction for the Week of Aug. 26, 1980

3,865,831	4,179,519	4,195,699	4,201,730
3,872,309	4,179,764	4,197,186	4,201,927
3,900,476	4,180,502	4,197,223	4,202,442
4,022,217	4,184,683	4,197,784	4,202,698
4,046,017	4,185,456	4,198,048	4,203,194
4,052,719	4,186,816	4,198,516	4,203,926
4,079,299	4,187,095	4,198,690	4,203,997
4,088,138	4,187,098	4,198,802	4,204,640
4,133,141	4,187,236	4,198,990	4,204,998
4,145,214	4,187,542	4,199,507	4,205,315
4,149,732	4,187,635	4,199,900	4,205,958
4,150,998	4,188,431	4,200,447	4,206,546
4,151,431	4,189,101	4,200,947	4,206,665
4,154,714	4,191,513	4,200,967	4,206,846
4,173,320	4,191,610	4,200,995	4,207,916
4,173,531	4,192,369	4,201,181	4,207,918
4,173,704	4,192,878	4,201,182	4,208,521
4,177,247	4,194,469	4,201,484	4,209,620
4,178,551	4,194,650	4,201,544	4,209,731
4,179,480	4,195,181	4,201,557	4,209,855

Disclaimers

4,049,848.—*Clark W. Goodale*, Canoga Park; *Charles W. Morgan*, Rolling Hills and *Albert L. Rhoton*, Cypress, Calif. TEXTURED-FOAM COATED URETHANE WALL AND CEILING COVERING AND METHOD OF MAKING THE SAME. Patent dated Sept. 20, 1977. Disclaimer filed July 1, 1980, by the assignee, *United Foam Corporation*.

Hereby enters this disclaimer to claims 1–42, inclusive, of said patent.

4,084,030.—*Clark W. Goodale*, Canoga Park; *Charles W. Morgan*, Rolling Hills and *Albert L. Rhoton*, Cypress, Calif. TEXTURED-FOAM COATED URETHANE WALL AND CEILING MATERIAL. Patent dated Apr. 11, 1978. Disclaimer filed July 1, 1980, by the assignee, *United Foam Corporation*.

Hereby enters this disclaimer to claims 1–10, inclusive of said patent.

4,084,139.—*Eugene J. Jakobe*, Kansas City, Mo. SHOULDER SUPPORTED STEREOPHONIC RADIO RECEIVER. Patent dated Apr. 11, 1978. Disclaimer filed July 7, 1980, by the assignee, *William J. Haas*.

Hereby enters this disclaimer to claims 1, 2 and 7 of said patent.

Disclaimers and Dedications

3,798,684.—*Roland A. Benoit*, Danielson, *John H. Curran*, Norwich and *Richard L. Bennice*, Danielson, Conn. FLUIDIC SWITCHING SYSTEM. Patent dated Mar. 26, 1974. Disclaimer and Dedication filed June 12, 1980, by the assignee, *Interroyal Corporation*.

Hereby disclaims and dedicates to the Public the remaining term of said patent.

3,998,740.—*Curtis C. Bost, Eugene Scott Irwin*, Clemson; *Thomas M. Keineth, Robert Q. Russell*, Seneca; *Harsch C. Ince, Jr.*, Greenville, S.C., *Gary L. Parsons*, Gastonia and *James Keith Turner*, Lincolnton, N.C. APPARATUS FOR TREATMENT OF TEXTILE DESIZING EFFLUENT. Patent dated Dec. 21, 1976. Disclaimer and Dedication filed June 26, 1980, by the assignee, *J. P. Stevens & Co., Inc.*

Hereby disclaims and dedicates to the Public claims 1 through 6 of said patent.

3,485,587.—*Albert S. Keston*, Weehawken, N.J. PROTEIN INDICATOR. Patent dated Dec. 23, 1969. Disclaimer and Dedication filed June 20, 1980, by the assignee, *Miles Laboratories, Inc.*

Hereby disclaims and dedicates to the Public the term of this patent subsequent to June 20, 1980.

4,180,674.—*James M. Photis*, Ridgefield, Conn. PROCESS FOR PREPARING BUTYL-P-BENZOYL-BENZOATES. Patent dated Dec. 25, 1979. Disclaimer and Dedication filed May 27, 1980, by the assignee, *Stauffer Chemical Company*.

Hereby disclaims and dedicates to the Public the entire remaining term of said patent.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of patent applications cited are available from the National Technical Information Service (NTIS), Springfield, Va. 22161, for $5.00 each ($10.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to avoid premature disclosure. Claims and other technical data will usually be made available to serious prospective licensees upon execution of a non-disclosure agreement.

Requests for information on the licensing of particular inventions should be directed to the addresses cited for the agency-sponsors.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents,
National Technical Information Service,
U.S. Department of Commerce.

U.S. DEPARTMENT OF THE AIR FORCE
AF/JACP, 1900 Half St., SW., Washington, D.C. 20324

Patent application 6–103,644. Highly Accurate Projectile for Use With Small Arms. Filed Dec. 14, 1979.

Patent application 6–104,923. Optical Dome Protection Device. Filed. Dec. 18, 1979.

Patent application 6–109,592. Variable Contrast Optical Pattern Generator. Filed Jan. 4, 1980.

Patent application 6–110,145. Color Contrast Sensitivity Measuring Device. Filed Jan. 7, 1980.

Patent application 6–110,957. Aircraft Load Factor Overload Warning Systems. Filed Jan. 10, 1980.

Patent application 6–111,044. Stabilizer for an Ejection Seat. Filed Jan. 10, 1980.

Patent application 6–114,533. Advanced Air-to-Surface Weapon. Filed Jan. 23, 1980.

Patent 4,187,595. Method of Fabricating Nozzle Blades for Lasers. Filed Sept. 12, 1978. Patented Feb. 12, 1980. Not available NTIS.

Patent 4,187,675. Compact Air-to-Air Heat Exchanger for Jet Engine Application. Filed Oct. 14, 1977. Patented Feb. 12, 1980. Not available NTIS.

Patent 4,188,001. Latch Mechanism. Filed July 31, 1978. Patented Feb. 12, 1980. Not available NTIS.

Patent 4,188,591. RF Excited Mercury Laser Lamp. Filed Oct. 7, 1977. Patented Feb. 12, 1980. Not available NTIS.

Patent 4,190,814. Single Axis Resonator for Laser. Filed Mar. 1, 1978. Patented Feb. 26, 1980. Not available NTIS.

Patent 4,192,235. Radiant-Energy Controlled Proximity Fuze. Filed July 8, 1964. Patented Mar. 11, 1980. Not available NTIS.

Patent 4,192,967. Teletype Mixer Apparatus for Coding and Decoding. Filed May 26, 1966. Patented Mar. 11, 1980. Not available NTIS.

Patent 4,193,059. Attitude Indicator Comparator Warning System. Filed June 15, 1978. Patented Mar. 11, 1980. Not available NTIS.

Patent 4,194,200. Combined Receiver Protector, AGC Attenuator and Sensitivity Time Control Device. Filed Nov. 1, 1978. Patented Mar. 18, 1980. Not available NTIS.

Patent 4,194,205. R.F. Power and Video Modulation Monitoring Circuit for Countermeasures System. Filed Jan. 6, 1978. Patented Mar. 18, 1980. Not available NTIS.

Patent 4,194,206. Instantaneous Frequency Measurement (IFM) Receiver With Capability To Separate cw and Pulsed Signals. Filed Dec. 22, 1978. Patented Mar. 18, 1980. Not available NTIS.

Patent 4,194,209. Broadband Waveguide Lens Antenna and Method of Fabrication. Filed Dec. 30, 1977. Patented Mar. 18, 1980. Not available NTIS.

Patent 4,194,708. Remotely Piloted Vehicle. Filed Sept. 21, 1978. Patented Mar. 25, 1980. Not available NTIS.

Patent 4,194,811. Remotely Controlled Electromagnetic Optical Focusing Assembly. Filed May 3, 1978. Patented Mar. 25, 1980. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Research
Code 302, Arlington, Va. 22217

Patent application 6–086,214. High Stability Commutator Bar. Filed Oct. 18, 1979.

Patent application 6–097,454. Multiple Frequency Oscillator. Filed Nov. 26, 1979.

Patent application 6–106,788. Nondestructive Analysis of Multilayer Roughness Correlation. Filed Dec. 26, 1979.

Patent application 6–114,002. A Pattern Generator for Simulating Image Generation. Filed Jan. 21, 1980.

Patent application 6–119,058. Optical Fiber Test Apparatus. Filed Feb. 6, 1980.

Patent application 6–121,553. Wide Angle Infinity Display System. Filed Feb. 14, 1980.

Patent application 6–122,222. An Improved Method of Liquid Phase Epitaxial Growth of III–V Compound. Filed Feb. 19, 1980.

Patent 4,156,863. Conical Beam Transducer Array. Filed Apr. 28, 1978. Patented May 29, 1979. Not available NTIS.

Patent 4,171,664. Mine Simulator Planting Rack and Release Mechanism. Filed Feb. 13, 1978. Patented Oct. 23, 1979. Not available NTIS.

Patent 4,171,669. Decoy Flare. Filed Feb. 13, 1978. Patented Oct. 23, 1979. Not available NTIS.

Patent 4,177,530. Buoy System for Vertical Ocean Profiling. Filed May 15, 1978. Patented Dec. 11, 1979. Not available NTIS.

Patent 4,178,708. Fiber Optic Visual Display System. Filed June 21, 1977. Patented Dec. 18, 1979. Not available NTIS.

Patent 4,181,139. Multiple Function CO_2 Valve. Filed Nov. 21, 1977. Patented Jan. 1, 1980. Not available NTIS.

Patent 4,181,152. Control Manifold. Filed Mar. 6, 1978. Patented Jan. 1, 1980. Not available NTIS.

Patent 4,181,879. Mine Search Coil Simulator. Filed Feb. 13, 1978. Patented Jan. 1, 1980. Not available NTIS.

Patent 4,182,949. Self-Contained, Portable Underwater Stud Welder. Filed July 10, 1978. Patented Jan. 8, 1980. Not available NTIS.

Patent 4,184,093. Piezoelectric Polymer Rectangular Flexural Plate Hydrophone. Filed July 7, 1978. Patented Jan. 15, 1980. Not available NTIS.

Patent 4,184,539. Electronic Card Mount and Heat Transfer Assembly for Underwater Vehicles. Filed July 10, 1978. Patented Jan. 22, 1980. Not available NTIS.

Patent 4,184,801. Dual Loading and Stowage Apparatus. Filed June 16, 1978. Patented Jan. 22, 1980. Not available NTIS.

Patent 4,185,864. Remotely Controlled Cyclic Graphnel Hook Apparatus. Filed Mar. 23, 1977. Patented Jan. 29, 1980. Not available NTIS.

Patent 4,188,631. Linkage Apparatus for Synchronizing Aircraft Door Movements With the Deployment of a Door-Enclosed Antenna. Filed June 13, 1978. Patented Feb. 12, 1980. Not available NTIS.

Patent 4,188,971. Fluid Cutout Valve. Filed Apr. 27, 1978. Patented Feb. 19, 1980. Not available NTIS.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
California	Los Angeles Public Library	(213) 626–7555 Ext. 274
	Sacramento: California State Library	(916) 322–4572
	Sunnyvale Patent Library*	(408) 738–5580
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862–1777
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Public Library of Cincinnati & Hamilton County	(513) 369-6936
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255–7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448–1224**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 12 o'clock noon and 5 :00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JULY 12, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—R. FRIEDMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy: Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-16-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director. Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-2-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Fore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	5-3-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director. Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	11-14-79
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	7-11-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	12-11-78
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	3-2-79
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director. Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-29-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	12-20-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-3-78
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	8-8-78
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	2-2-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	5-21-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	6-7-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	2-7-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director. Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-19-79

Expiration of patents: The patents within the range of numbers indicated below expire during July 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,095,572 to 3,099,836, inclusive
Plant Patents ..... Numbers 2,269 to 2,270, inclusive

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JULY 31, 1990

REISSUES

AUGUST 26, 1980

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,380
MOLD FOR CONTINUOUS CASTING OF METAL

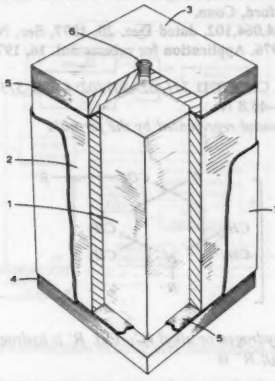
Lorne R. Shrum, 820 Manchester Rd., London, Ontario, Canada (N6H 4J6)

Original No. 3,927,546, dated Dec. 23, 1975, Ser. No. 515,072, Oct. 15, 1974. Application for reissue Sep. 27, 1976, Ser. No. 726,940

Claims priority, application United Kingdom, Nov. 6, 1973, 51531/73

Int. Cl.[2] B21D *26/08*

U.S. Cl. 72—56 10 Claims



1. A method of forming a tubular copper mould for the continuous casting of metals, comprising the steps of:

forming an arbor having an external surface having the profile and finish required of the finished mould,

fitting a copper sleeve of the same general shape as the finished mould on the arbor,

surrounding the sleeve with a charge of high explosive material providing a detonation path extending longitudinally of the sleeve, fully immersing the sleeve and its surrounding charge in a liquid,

detonating the charge so as to apply a pressure to the sleeve sufficient to cause plastic flow in the material thereof, and withdrawing the arbor from the sleeve.

Re. 30,381
FLEXIBLE ROTARY COUPLING

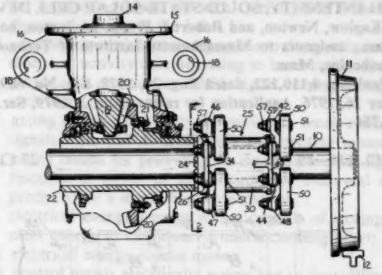
Donald L. Ries, Dearborn Heights, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Original No. 4,051,784, dated Oct. 4, 1977, Ser. No. 676,087, Apr. 12, 1976. Application for reissue Jul. 19, 1978, Ser. No. 926,161

Int. Cl.[2] B61C *9/34, 9/57;* F16D *3/04, 3/62*

U.S. Cl. 105—131 8 Claims

1. A coupling for transmitting torque from a rotary driving means to a rotary driven means comprising a first member adapted to be connected to said driving means, a second member adapted to be connected to said driven means, an elongate member intermediate said first and second members and means drivingly connecting said first and second members respectively to opposite ends of said intermediate member, said *last named* means connecting at least one of said members to its respective end of said intermediate member comprising a plurality of links and connecting pins with each link having a pair of connecting pins with one end of each connecting pin seated within said link and with the pins extending in one direction away from said link with one connecting pin of each link secured adjacent its other ends to means extending radially



outward from said one member and the other connecting pin secured adjacent its other end to means extending radially outward from said intermediate member.

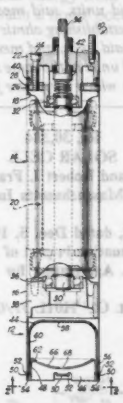
Re. 30,382
ASSEMBLY FOR SEALING AND PRESSURE EQUALIZATION OF A SUBMERSIBLE HOUSING

Ronald D. Mandell, Elkhorn, Wis., assignor to Sta-Rite Industries, Inc., Delavan, Wis.

Original No. 4,015,633, dated Apr. 5, 1977, Ser. No. 623,499, Oct. 17, 1975. Application for reissue Oct. 16, 1978, Ser. No. 951,968

Int. Cl.[2] F16L *55/00;* B65D *7/42*

U.S. Cl. 138—89 11 Claims



9. An assembly for sealing and pressure equalization of a device subject to internal and external fluid pressures and including a housing with a generally cylindrical open ended interior wall, said assembly comprising retaining means having a cylindrical band member with exterior wall structure spaced from said interior wall and an imperforate cup-shaped open ended flexible diaphragm having a cylindrical side wall sandwiched in said space against adjacent portions of said interior wall and exterior wall structure; said assembly being characterized in that said exterior wall structure is dimensioned to press against the interior of and to press the

exterior of the diaphragm side wall against the interior wall of the housing, said housing interior wall having recess means defined in a circle spaced inwardly from the open end thereof and located below the open end of the diaphragm, and said retaining means has circularly arrayed locking structure below the open end of the diaphragm and extending outwardly beyond the diaphragm side wall into said recess means.

Re. 30,383

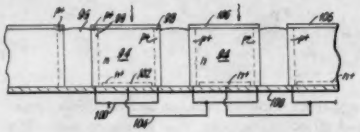
HIGH-INTENSITY, SOLID-STATE-SOLAR CELL DEVICE

Roy Kaplow, Newton, and Robert I. Frank, Lexington, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Original No. 4,110,122, dated Aug. 29, 1978, Ser. No. 689,989, May 26, 1976. Application for reissue Apr. 3, 1979, Ser. No. 26,754

Int. Cl.² H01L *31/06*

U.S. Cl. 136—89 MS **27 Claims**



23. A semiconductor solar cell device comprising plural, spaced, elongate, parallel semiconductor units formed from a common substrate and comprised of a first conductivity type, the body material of each of said units having the same spaced relation to the body material of other of said units as in the original substrate from which they are formed, each unit having spaced elongate upstanding sidewalls and having therebetween an elongate surface adapted for exposure to receive incident radiation, each unit further comprising separate and independent regions of second, opposite conductivity type in the respective side walls of each unit, whereby in each unit said sidewall regions of second conductivity type are separated by body material of said first conductivity type, means interconnecting said units for combining the individual electrical outputs of said units, said means comprising separate conductive connections establishing ohmic contact with the respective sidewall regions of said units, and means fixedly retaining the material of said parallel units in the same spacial relation as in the common substrate from which they were formed.

Re. 30,384

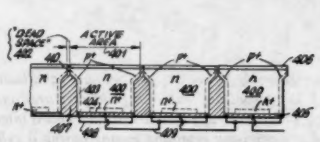
SOLAR CELL

Roy Kaplow, Newton, and Robert I. Frank, Lexington, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Original No. 4,128,732, dated Dec. 5, 1978, Ser. No. 871,496, Jan. 23, 1978. Continuation-in-part of Ser. No. 824,974, Aug. 15, 1977, abandoned. Application for reissue Apr. 27, 1979, Ser. No. 33,992

Int. Cl.² H01L *31/06*

U.S. Cl. 136—89 PC **38 Claims**



32. A semiconductor solar-cell array comprising a plurality of spaced, elongate, parallel units formed from a common substrate, the body material of each of said units being comprised of a first conductivity type and having the same spaced relation to the body material of other of said units as in the original substrate from which they are formed, each unit having upstanding sidewalls, and having therebetween an upper surface adapted for exposure to receive incident radiation and a lower surface, adjacent sidewalls of adjacent units having therebetween a first space portion extending from the lower surface to a point close to but short of the upper surface and a second substantially smaller space portion, connected to the first space portion and extending from said point to the upper surface, at least one sidewall of each unit including a localized region of a second conductivity type, and means interconnecting said units for combining the individual electrical outputs of said units, said means comprising separate conductive connections establishing ohmic contact with the respective sidewall regions of said units.

Re. 30,385

LIGHT AND HEAT STABILIZERS FOR POLYOLEFINS

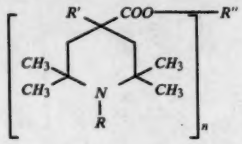
Ray L. Hillard, Annandale, and William B. Hardy, Bound Brook, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Original No. 4,064,102, dated Dec. 20, 1977, Ser. No. 668,156, Mar. 18, 1976. Application for reissue Jul. 16, 1979, Ser. No. 57,786

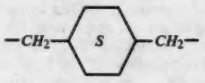
Int. Cl.² C07D *211/62, 401/02*; C08K *5/34*

U.S. Cl. 260—45.8 N **11 Claims**

10. A compound represented by the formula



wherein R is hydrogen or alkyl (C_1–C_8), R' is hydrogen or lower alkoxy (C_1–C_8); R'' is



and n is 2.

Re. 30,386

METHOD OF REDUCING THE AFLATOXIN CONTACT OF OILSEED MEAL PRODUCTS

Jean Brandt; Claude Giddey, and Guy Bunter, all of Geneva, Switzerland, assignors to Etablissements V.Q. Petersen & Cie, Senegal

Original No. 3,890,452, dated Jun. 17, 1975, Ser. No. 441,741, Feb. 12, 1974. Continuation of Ser. No. 666,007, Mar. 11, 1976, abandoned. Application for reissue Aug. 1, 1977, Ser. No. 820,830

Claims priority, application Switzerland, Feb. 13, 1973, 2005/73

Int. Cl.² A23K *3/00*

U.S. Cl. 426—335 **17 Claims**

1. A method of reducing the aflatoxin content of an aflatoxin contaminated oilseed product having *an aflatoxin content of about 500 to 2000 ppb. and* a fats content less than 10 percent, which comprises the steps of:

a. forming a homogeneous mixture comprising: the crushed product, from 10 to 40 percent by weight of water, at least one basic agent selected from the group consisting of the oxides and hydroxides of [alkali metals and] alkaline earth metals in an amount such that the homogeneous mixture has a pH of least 8, and at least one organic amine in an amount *of from about 0.1 to 0.6% by weight, the amount of said organic amine being* sufficient to further raise the pH to at least 9.5;

b. reacting the homogeneous mixture by maintaining the product at a temperature between room temperature and 150° C. for a time sufficient to reduce the aflatoxin content of the product to less than 100 ppb; and

c. drying the resulting detoxified product to reduce its water content.

Re. 30,387

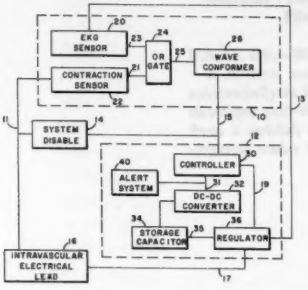
AUTOMATIC CARDIOVERTING CIRCUIT

Rollin H. Denniston, III, Golden, Colo., and Thomas E. Davis, Duluth, Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Original No. 3,805,795, dated Apr. 23, 1974, Ser. No. 235,756, Mar. 17, 1972. Application for reissue May 1, 1978, Ser. No. 901,962

Int. Cl.³ A61N *1/32*

U.S. Cl. 128—419 D **12 Claims**



2. Heart contraction sensing and stimulation apparatus comprising:

a. first heart monitoring means being in the form of an elastomer body means having conductive particles imbedded therein and exhibiting a change in electrical impedance upon flexing, the body means including means adapted to be positioned adjacent heart muscle so that each heart contraction causes the body means to flex thereby changing its impedance;

b. first detecting means responsive to a change in impedance of said elastomer body means for providing a first identifiable electrical signal corresponding with each heart contraction;

c. second heart monitoring means in the form of conductive electrode means being adapted for insertion within the human vascular system and positioned adjacent the heart for monitoring heart electrical activity and transmitting electrical energy to the heart,

d. second detecting means responsive to the monitored heart electrical activity corresponding to heart contractions for providing a second identifiable signal corresponding with each heart contraction;

e. gating means electrically connected to receive electrical signals from said first and second detecting means, said gating means for providing an electrical output signal in response to either of said identifiable electrical signals produced by a single heart contraction;

f. electrical energy storage means capable of storing sufficient energy to cardiovert a malfunctioning heart;

g. electrical energy source means;

h. control means electrically connected in controlling relation to said energy storage means and said energy source means and operatively connected to said gating means and responsive thereto, said control means for controlling the transmission of electrical energy from said source means to said storage means only in the absence of both said first and second identifiable signals for a predetermined period of time;

i. regulating means electrically connected to said electrode means and further connected in controlling relation to said energy storage means, said regulating means for permitting transmission of energy from said storage means to said electrode means when the energy stored by said storage means is greater than a predetermined level; and

j. disabling means electrically connected to said first monitoring means for sensing a break in the electrical circuitry of said first monitoring means, said disabling means for preventing electrical energy from being delivered to said electrodes when such a break occurs.

PLANT PATENTS

GRANTED AUGUST 26, 1980

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,589

CHRYSANTHEMUM NAMED WESTLAND

J. C. M. van der Knaap, De Lier, Netherlands, assignor to Pan-American Plant Company, West Chicago, Ill.

Filed Feb. 21, 1979, Ser. No. 13,303

Int. Cl.[3] **A01H** *5/00*

U.S. Cl. Plt.—80 **1 Claim**

1. A new and distinct variety of chrysanthemum plant, substantially as herein shown and described, characterized by its unique quill-shaped ray florets of a light pink color radiating from a reddish disc, and its uniform year-around flowering response under 9-week photoperiodic control.

PLANT PATENTS

GRANTED AUGUST 26, 1980

PATENTS

GRANTED AUG. 26, 1980

ERRATA

For CLASS	See PATENT NO.
368–109	4,218,871
368–082	4,218,872
368–281	4,218,873
084–484	4,218,874
368–073	4,218,875
368–010	4,218,876
474–165	4,218,931
474–161	4,218,932
440–113	4,218,988
119–070	4,219,084
273–309	4,219,200
424–263	4,219,479
548–260	4,219,480
549–068	4,219,482
568–365	4,219,504
568–348	4,219,505
568–496	4,219,506
568–411	4,219,507
568–387	4,219,508
568–473	4,219,509
455–227	4,219,777
455–205	4,219,778
455–321	4,219,779

PATENTS

GRANTED AUG. 26, 1980

ERRATA

CLASS	PATENT NO.
368-109	4,218,871
368-082	4,218,872
368-281	4,218,877
084-484	4,218,874
368-073	4,218,875
368-010	4,218,876
474-165	4,218,971
474-167	4,218,972
440-113	4,218,988
119-070	4,219,084
273-309	4,219,200
424-203	4,219,470
548-260	4,219,480
540-085	4,219,482
568-103	4,219,504
568-348	4,219,505
568-479	4,219,506
368-411	4,219,507
568-387	4,219,508
568-475	4,219,509
455-227	4,219,777
455-204	4,219,778
455-321	4,219,779

PATENTS

GRANTED AUGUST 26, 1980

GENERAL AND MECHANICAL

4,218,777
FACE PROTECTOR
Janetlee Munnikhuysen, 395 Young St., Wilson, N.Y. 14172
Filed Jul. 12, 1978, Ser. No. 923,918
Int. Cl.[2] A41D *13/00*
U.S. Cl. 2—9 **3 Claims**

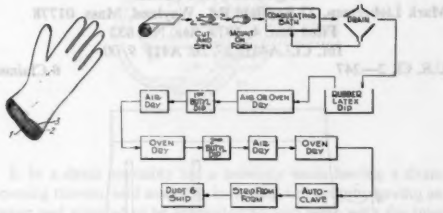
1. A face protector for protecting the face of a person during application of a spray to the hair while leaving exposed a major portion of the hair, said protector consisting of an imperforate strip of relatively thin, flexible material, said strip having one substantially straight longitudinal edge and one irregular longitudinal edge, the latter comprising a medial portion and end portions parallel to said straight longitudinal edge, said medial portion being approximately ½ the length of said strip and each of said end portions being approximately ¼ the length of said strip, said end portions and said medial portion of said irregular edge being connected by straight sloping portions, each of the end portions of the strip having a width of approximately ½ the maximum width of said strip and being free whereby they may be grasped and held together by the hand of a user to position said strip closely around the face with the medial portion of said strip resting on the hair and extending over the eyes and face of the user, said strip being symmetrical with respect to a line passing through the middle thereof normal to said straight edge and to the medial portion of said irregular edge.

4,218,778
HIGHLY STRETCHABLE GLOVE AND FORM FOR MAKING SAME
Benjamin Stansbury, Beverly Hills, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.
Division of Ser. No. 846,911, Oct. 31, 1977. This application Nov. 13, 1978, Ser. No. 960,420
Int. Cl.[2] A41D *19/00*
U.S. Cl. 2—163 **3 Claims**

1. A highly stretchable glove, which has a front palm section, an offset thumb for fitting either a left or right hand, but not both, and a thumb ball section, wherein the improvement comprises: an exaggerated thumb ball section of the glove to provide added material in a direction diagonally across the glove palm from the thumb ball to a base of the glove's little finger and having a generally S-shaped profile along such diagonal with an undercut section adjacent such thumb ball, whereby the thumb can freely move toward and away from a

glove finger without excessive stretching of the glove palm in this diagonal direction when the glove is stretchingly donned.

4,218,779
CHEMICAL RESISTANT ARTICLE
John A. Hart, Kanata, and John C. Collyer, Ottawa, both of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada
Division of Ser. No. 881,533, Feb. 27, 1978. This application Sep. 29, 1978, Ser. No. 947,702
Claims priority, application Canada, Dec. 8, 1977, 292702/77
Int. Cl.[2] A41D *19/00*
U.S. Cl. 2—168 **19 Claims**

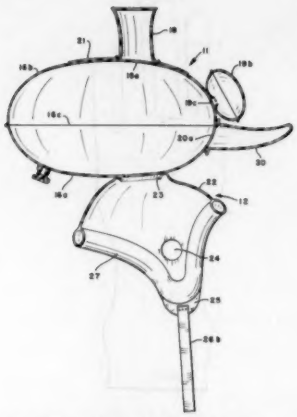


1. A multi-layered article of clothing comprising, in combination, an inner layer of a resilient elastomer selected from the group consisting of natural rubber, polyacrylate, polybutadiene, styrene-butadiene copolymer, acrylonitrile-butadiene and polychloroprene and an outer layer of a butyl rubber completely covering and integral with the inner layer, said inner layer having a high affinity for a toxic chemical vapor and being impermeable to said toxic chemical vapor, and said outer butyl rubber layer being substantially impermeable to a toxic chemical liquid and having a low toxic chemical vapor permeability, thereby providing high resistance to toxic chemical in liquid and vapor form.

4,218,780
COSTUME HEADDRESSES

Glen H. Growe, Minneapolis, and Robert L. Williams, Eden Prairie, both of Minn., assignors to Philmon & Hart Laboratories, Incorporated

Filed Feb. 16, 1979, Ser. No. 12,888
Int. Cl.[2] A42B 1/24
U.S. Cl. 2—199 5 Claims

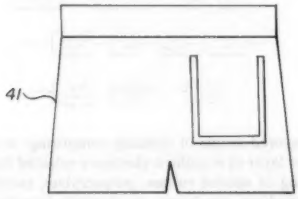


1. A decorative head covering including:
a. an inflatable upper portion;
b. means to inflate said upper portion;
c. a head receiving portion defining a helmet and arranged and constructed to conform to the head of a person wearing the same and having a lower peripheral edge;
d. means for joining the inflatable upper portion to a selected portion of said head receiving portion;
e. at least one appendage sealingly connected to said upper inflatable portion for inflation therewith; and,
f. and an inflatable member arranged at the lower peripheral edge of said helmet of said head receiving portion with means to inflate the same for conforming and securing the helmet to the users head.

4,218,781
ATHLETIC APPAREL

Mark Lieberman, 27 Bayfield Rd., Wayland, Mass. 01778

Filed Jan. 4, 1979, Ser. No. 832
Int. Cl.[2] A41D 27/20; A41F 9/00
U.S. Cl. 2—247 6 Claims



1. Athletic apparel comprising:
an article of clothing to be worn by a participant in an athletic endeavor;
a moisture absorbent pad for absorbing perspiration collected on the hands of the participant;
fastening means for removably attaching said moisture absorbent pad to said article of clothing, said fastening means comprising fastener elements secured along adjoining edges on one side of said absorbent pad, and mating elements secured at spaced apart locations on the outer surface of said article of clothing and arranged thereon so as to support said pad in the form of a pocket on said article of clothing, said mating elements detachably engaging said fastener elements to secure said adjoining edges of said absorbent pad in a substantially planar orientation on the outer surface of said article of clothing; and
a sheet of moisture impervious material positioned between said outer surface and said absorbent pad and substantially covering said one side thereof so as to prevent body moisture from passing through said article of clothing to said pad.

4,218,782
HEART VALVE PROSTHESIS AND METHOD FOR THE PRODUCTION THEREOF

Inge H. Rygg, Charlottenlund, Denmark, assignor to Biocoating Anpartsselskab, Copenhagen, Denmark

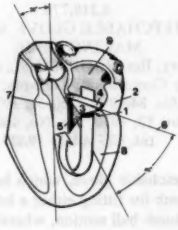
Filed May 19, 1978, Ser. No. 907,580
Claims priority, application Denmark, May 25, 1977, 2290/77
Int. Cl.[2] A61F 1/22
U.S. Cl. 3—1.5 20 Claims

1. A heart valve prosthesis made from a flat strip piece of a stabilized biological membrane which is folded along at least one folding line to form opposed layers and attached to a flat flexible non-biological base material to form at least one leaflet.

4,218,783
PROSTHETIC CLOSURE ELEMENT FOR THE REPLACEMENT OF THE MITRAL AND TRICUSPID VALVE IN THE HUMAN HEART

Helmut Reul, Düren, Fed. Rep. of Germany, and Dhanjoo N. Ghista, Sunnyvale, Calif., assignors to Dr. E. Fresenius, Chem.-Pharm. Industrie KG, Bad Homburg, Fed. Rep. of Germany

Filed Sep. 21, 1978, Ser. No. 944,379
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1977, 2742681
Int. Cl.[2] A61F 1/22
U.S. Cl. 3—1.5 13 Claims



1. A prosthetic closure element for the replacement of the mitral and tricuspid valve in the human heart having a valve housing, a suture ring for the attachment of the valve housing

in the tissue and a flap movably mounted within the housing, characterized in that the flap is formed in the form of a thin flexible membrane and generally represents that part of the surface of an elliptical cylinder

$$\frac{y^2}{R_i^2} + \frac{z^2}{(R_i \tan \alpha)^2} = 1$$

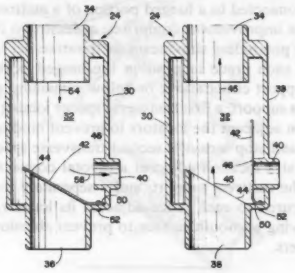
which is cut out by a circular cylinder $x^2+y^2=R_i^2$, whereby R_i is the radius of the circular cylinder and α is half the valve opening angle and whereby the angle between the central axes of the two cylinders in the closed condition of the membrane amounts to 90° and in the open condition amounts to $90°-2\alpha$; that the valve housing (3) represents generally a part of the surface of a circular tube with an inner radius R_i and an outer radius R_a which is cut by the elliptical cylinder under an angle of 90°; and that the membrane (5) is fastened along the half periphery of the intersection edge (13) between the pair of extreme points (14) of said valve housing.

4,218,784

DUAL-PURPOSE DIVERTER VALVE

Gary Richards, 3204 Palm Ave., Manhattan Beach, Calif. 90266

Filed Apr. 25, 1979, Ser. No. 33,164
Int. Cl.[2] A47K *3/10, 3/00, 3/09*
U.S. Cl. 4—543 **5 Claims**



1. A diverter-valve device in association with an air-pressure system adapted for use with a hot-tub-spa unit, or the like, having conduit and discharge nozzles connected to said tub unit, comprising:

a housing having an inlet port and an outlet port oppositely disposed to each other, said inlet port being connected to the upstream side of said air-pressure system adjacent said pump, and said outlet port being connected to said downstream side of said air-pressure system, whereby pressurized air flow is allowed to flow through said conduits and be discharged into said tub;

a transitory chamber defined by said housing and interposed between said inlet and outlet ports for air-flow communication therebetween;

an inlet-valve set formed as part of said inlet port and positioned within said chamber;

a back-flow vent disposed in said housing adjacent said inlet port, and arranged at right angles thereto to provide communication between said chamber and atmosphere, whereby said inlet-valve set is angularly disposed relative to said backflow vent;

a vent-valve set formed as part of said back-flow vent and positioned within said chamber; and

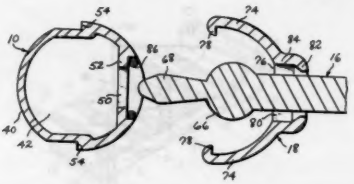
a flap-valve member operably disposed between said inlet-valve set and said vent-valve set, so as to engage and close said inlet port when said air-pressure system is shut down, and to engage and close said back-flow vent when said air-pressure system is operational.

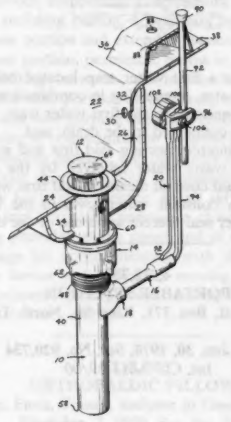
4,218,785

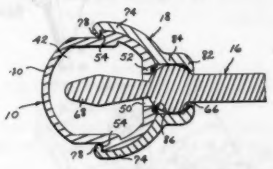
DRAIN ASSEMBLY FOR A LAVATORY BASIN

Dennis W. Crawford, Pontiac, and Larry G. Turner, Waterford, both of Mich., assignors to Bristol Products, Inc., Elkhart, Ind.

Filed Apr. 16, 1979, Ser. No. 30,118
Int. Cl.[3] E03C *1/22;* A47K *1/14*
U.S. Cl. 4—203 **11 Claims**



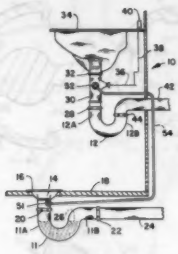




1. In a drain assembly for a lavatory basin having a drain opening therein, said assembly including a drain tube having an upper end adapted to be supported by said basin with the tube extending through said drain opening, said drain tube including a side wall defining a liquid conduit extending from its said upper end lengthwise through the tube and having a side opening therein spaced from its said upper end in communication with the liquid conduit, a plug fitted into said liquid conduit at the upper end of said drain tube, a lift rod extending through said drain tube side opening and engaging said plug for lifting the plug out of liquid sealing engagement with the drain tube, an improvement wherein said drain tube includes an abutment part defining at least in part said side opening therein, said lift rod including a rounded bearing section, said drain tube including engagement parts, a retainer clamp contacting said rod bearing section and including means interlock-

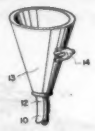
ing with said drain tube engagement parts for urging the bearing section pivotally against said drain tube abutment part.

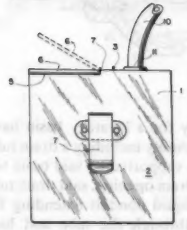
4,218,786
WATER SAVING TRAP PRIMER
Joseph Taglarino, 107 S. Lincoln Ave., Tampa, Fla. 33609
Filed Feb. 8, 1979, Ser. No. 10,373
Int. Cl.³ E03C *1/24*
U.S. Cl. 4—206 **8 Claims**



1. A primer for a first water trap located below a drain receiving waste water, comprising in combination:
a first fitting connected to the first water trap;
a second fitting connected to the drain; and
conduit means interconnecting said first and second fitting enabling the waste water received by the drain to be diverted by said conduit means to said first water trap for maintaining a constant water level in the first trap to insure a proper seal therein upon use of the drain.

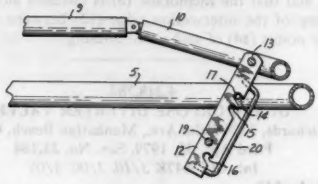
4,218,787
PORTABLE SPITTOON
Stanley M. Puckett, Box 371, King St., North Tazewell, Va. 24630
Filed Jun. 30, 1978, Ser. No. 920,734
Int. Cl.³ A61J *19/00*
U.S. Cl. 4—258 **2 Claims**





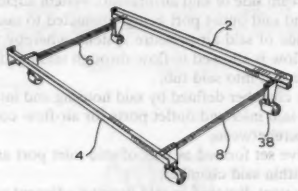
1. A portable spittoon, comprising
a liquid-tight container having a back and a top extending substantially perpendicularly to the back, said top having a hole formed therethrough, an opening formed therethrough in spaced relation with the hole and a closable cover hingedly affixed thereto for selectively covering said opening;
a belt clip affixed to the back of the container for removably affixing the container to a belt worn by a user;
a hose having spaced opposite first and second ends, said hose being affixed at its first end to the top of the container at the hole therethrough and opening into said container; and
a funnel affixed to said hose at the second end of said hose and opening into said hose whereby the user may expectorate into said container via said funnel and said hose.

4,218,788
ADJUSTABLE MATTRESS SUPPORT FOR STRETCHER OR THE LIKE
Bradd E. Steckmesser, Manitowoc, Wis., assignor to American Hospital Supply Corporation, Evanston, Ill.
Filed Mar. 9, 1979, Ser. No. 18,978
Int. Cl.² A61G *7/10*; A47C *3/32*
U.S. Cl. 5—74 R **5 Claims**



1. A stretcher or the like with a pair of adjustable braces pivotally connected to a hinged portion of a mattress support, wherein the improvement comprises: at least two locators on each brace; protruding stop means on the stretcher to engage a locator on each brace to position the hinged portion of the mattress support either above or below remaining portions of the mattress support; a first transverse spacer joining the braces at a location adjacent the locators to prevent binding between the braces and stop means; a second transverse spacer joining the braces at a location adjacent a pivotal connection of the braces to the mattress support; and a separately formed stop retainer secured to each brace adjacent its locator, said stop retainer having a smooth surface to prevent abrasion with the stop members.

4,218,789
BED STAND
Arturo Grassi, 2547 Drew Rd., Mississsauga, Ontario, Canada
Filed Feb. 21, 1979, Ser. No. 13,174
Int. Cl.² A47C *19/00*; A47B *19/04*
U.S. Cl. 5—201 **4 Claims**



1. A bed stand comprising complementary side rails each having a longitudinal horizontal centre web, a longitudinal upturned outer flange and a longitudinal downturned inner flange, the web and one of the flanges of each rail being independently bent at one end into a common plane perpendicular to the longitudinal extend of the rails to form a mounting flange for a headboard, at least two cross members spaced longitudinally of the rails and each comprising two telescopically nesting horizontal members of similar cross section and means releasably uniting the horizontal members in any one of

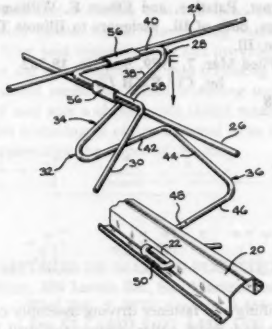
a plurality of different telescoped relationships, each horizontal member having a downwardly extending leg, a castor at the foot of said leg, and outwardly extending shallow hook means, shelf means at a lower level than the upper extremity of said hook means, and outwardly facing vertical abutment means beneath said hook means and said ledge means, whereby said hook means of each horizontal member extend into but not through apertures in the webs of said side rails, and the inner flanges of said side rails rest against said abutment means, and the webs or the inner flanges of the side rails rest on said shelf means.

4,218,790

BOX SPRING ASSEMBLY WITH IMPROVED STIFFNESS CHARACTERISTICS

Ned W. Mizelle, Lexington, Ky., assignor to Hoover Universal, Inc., Saline, Mich.

Filed May 7, 1979, Ser. No. 36,669
Int. Cl.³ A47C *23/02*
U.S. Cl. 5—247 **6 Claims**



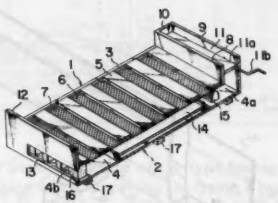
1. In a box spring assembly which includes a generally rectangular frame, a plurality of wire springs mounted on said frame and connected to each other so as to yieldably resist downwardly directed bedding loads, each of said springs being formed of spring steel wire and having an elongated body portion arranged above said frame and downwardly extending end portions, each of said end portions having an upper section and a lower section which are located in planes which are upright and generally perpendicular to each other, said upper section having a bendable upper leg that is inclined downwardly and a lower leg that extends at one end from the lower end of said upper leg, said lower leg being bendable and being inclined at an angle of less than ninety degrees with respect to said upper leg, said legs being relatively arranged so that said angle is decreased in response to the application of downwardly directed load to the upper end of said upper leg, said lower section having a bendable upper leg which extends at one end from the other end of said lower leg, said lower section further including a lower leg which extends downwardly from the other end of the upper leg in said lower section, a torsion bar mounted on said frame and formed integral with the lower end of the lower leg in said lower section, and means mounting said torsion bar on said frame, said legs in said lower section being relatively inclined so that the included angle therebetween is less than ninety degrees, so that in response to said bedding load on said upper section, at least some of said legs are stressed so as to resist said load with both shear and tensile stresses.

4,218,791

DEVICE FOR USE AS A BED OR BEDSTEAD

Ko Itoku, 4713, Uenohara,Uenohara-machi, Kitatsurugun, Yamanashi Pref., Japan

Filed Sep. 22, 1978, Ser. No. 944,800
Claims priority, application Japan, Dec. 28, 1977, 52-175714[U]
Int. Cl.² A61B *19/00*; F24F *9/00*
U.S. Cl. 5—284 **25 Claims**



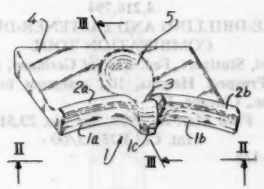
1. A bed device comprising a supporting base portion for supporting a reclining person, a generally horizontal passage below said base portion and extending beneath the upper surface of the base portion, permeable means in said base portion for communicating between said horizontal passage and a space above the base portion; an upwardly extending passage at one end of said base portion; one end portion of said horizontal passage being in communication with the lower end of said upwardly extending passage; said upwardly extending passage having an upper opening which is substantially higher than said generally horizontal passage; an air inlet opening at another end of said horizontal passage; a closable air discharge portion being provided at the upper end of the upwardly extending passage for communicating with the air space surrounding the device and means for moving air through said generally horizontal passage and said upwardly extending passage by a chimney effect.

4,218,792

ORTHOPAEDIC PILLOW

Henry Kogan, Paris, France, assignor to Condor, Paris, France

Filed Jan. 3, 1979, Ser. No. 783
Claims priority, application France, Oct. 3, 1978, 78 28211
Int. Cl.³ A47G *9/00*
U.S. Cl. 5—436 **12 Claims**

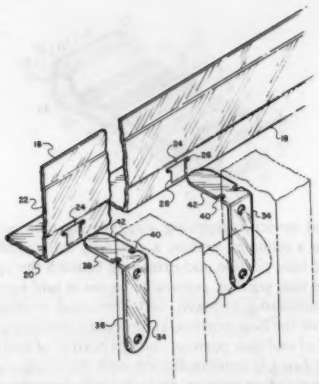


1. An orthopaedic pillow comprising a block of cellular foamed material, said block having a general consistence of latex foam and presenting, viewed in a plane, substantially the shape of a four-sided geometric figure having having two long sides and two relatively shorter sides, one of said long sides having a concave frontal curvature, the top of said block delimiting a concavity in its medium portion extending to said concave frontal curvature, said concavity being continued rearwardly by a recess into which a user's head can be placed; a convex boss projecting forwardly from the frontal curvature of said block for receiving the nape of a user's neck, and means for providing differing degrees of hardness from one portion of the pillow to another.

4,218,793
MOUNTING ASSEMBLY FOR BUNK BED LADDER OR THE LIKE

Richard B. Hooker, Linwood, N.C., assignor to Hickory Springs Manufacturing Company, Hickory, N.C.

Filed Nov. 6, 1978, Ser. No. 957,880
Int. Cl.[2] A47C *17/40*
U.S. Cl. 5—8 9 Claims



1. A mounting assembly for hanging a ladder or the like from the upper bunk of a bunk bed or the like, said bunk bed being of the type having a box spring, said mounting assembly comprising:

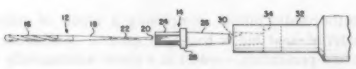
(a) a support member affixed to the upper bunk, said support member having a slot formed therein adjacent the box spring, and

(b) a hanger bracket having a hanging leg attached to the ladder and a mounting leg extending from said hanging leg, said mounting leg being insertable through said slot, being of a length sufficient to extend below the lower surface of said box spring upon insertion of said mounting leg through said slot, and being shaped for retention in said slot against lateral outward movement thereof when said mounting leg is under said box spring, thereby preventing inadvertent withdrawal of said bracket from said slot to maintain the ladder or the like attached to said support member.

4,218,794
HOLE-DRILLING AND FASTENER-DRIVING COMBINATION TOOL

Bernd Seidel, Stuttgart, Fed. Rep. of Germany, and George G. Dewey, Prospect Heights, Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Mar. 23, 1979, Ser. No. 23,519
Int. Cl.[2] B25F *3/00*
U.S. Cl. 7—138 9 Claims

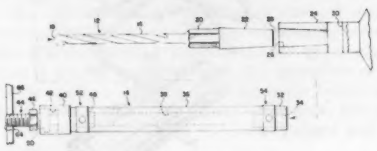


1. A hole-drilling and fastener-driving combination tool comprising a one-piece, three-sectioned drill bit means; a one-piece adaptor; and a drive collar means; said drill bit means having a first drilling section, a second tapering section, and a third knockout section; said adaptor having a first outer portion with a polygonal configuration, a second outer portion which is tapered and adapted to be received in a correspondingly shaped aperture of a power tool chuck, and an internal longitudinally extending bore, at least a portion of which has a taper that is complementary to that of the second section of the drill bit and adapted to mate therewith, said drilling section projecting from one end of said bore, in assembled condition, and said knockout section projecting beyond the other end of said longitudinal bore where it may be engaged by a knockout wedge; said drive collar means having a first portion with an internal recess which is complementary to the polygonal portion of the adaptor, a second portion which has a longitudinally extending bore therethrough of sufficient diameter and length to receive the drilling section, and a third portion which has a fastener-engaging recess; whereby, the tapered portion of the adaptor may be inserted in a complementary aperture in a chuck and frictionally driven thereby, the drill bit being inserted into said adaptor where it is frictionally retained and driven by said mating tapers such that a hole is drilled in a workpiece, said drive collar then being slipped onto said adaptor and used to rotationally advance a self-tapping fastener into the hole in said workpiece.

4,218,795
DRILL BIT WITH FASTENER-DRIVING COLLAR ASSEMBLY

Richard J. Ernst, Palatine, and Elbert E. Williams, Jr., Elk Grove Village, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Mar. 7, 1979, Ser. No. 18,382
Int. Cl.[2] B26B *11/00*
U.S. Cl. 7—158 7 Claims



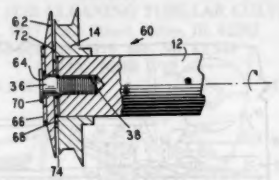
1. A hole-drilling and fastener driving assembly comprising drill bit means and drive collar means; the drill bit means comprising a three-sectioned, one-piece member having a drill tip, a first section, a second section and a third section all extending along a common axis; said first section comprising a fluted drilling section extending from the drill tip to the start of the second section; said second section having a polygonal configuration which defines a first radial dimension extending from one apex of the polygon to a diametrically opposed portion; said second section joining with the third section; said third section having a major radial dimension exceeding said first dimension and gradually tapering downwardly toward the end opposing the drill tip, said third section being adapted to be received in a correspondingly shaped aperture of a chuck of a rotary hammer; said drive collar means including first, second and third portions, said first portion constituting the drive receiving portion and having a polygonal aperture corresponding to and being adapted to receive the polygonal section of the drill bit means, said second portion having a longitudinally extending aperture of sufficient diameter and length to house the drill tip and drilling section of the bit means, said third portion including a fastener-engaging recess adapted to engage and drive the head of a self-tapping fastener, whereby the drill bit means may be inserted in and frictionally driven by said chuck to create a hole in a workpiece and the drive collar means subsequently slipped thereover and drive torque transmitted to said collar means from the drill bit means by the mating polygonal section and aperture and, in turn, from the drill bit means to the fastener by means of the fastener engaging recess to advance the fastener into the just-drilled hole.

4,218,796

METHOD AND APPARATUS FOR THE EDGE TRIMMING OF SHOES, HABERDASHERY GOODS, ETC.

Lilian Gorelik, 2740 W. Granville Ave., Chicago, Ill. 60659

Filed Oct. 20, 1978, Ser. No. 953,083
Int. Cl.[2] A43D *43/06*
U.S. Cl. 12—90 5 Claims



1. Apparatus for trimming the edge of a sole of a shoe which is joined to the upper of the shoe comprising:

one-piece guide shield means to be received between the sole and the upper of the shoe at the joint therebetween;

a trimming tool mounted for rotation; and

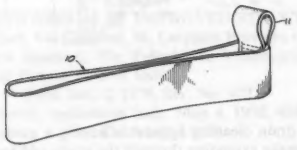
spacer means mounted coaxially with said guide shield means and said trimming tool and fixed with respect to said guide shield means for spacing said guide shield means from said trimming tool and providing that movement of the shoe, relative to said trimming tool and said guide shield means with said trimming tool against the edge of said sole and the guide shield means at the joint provides trimming of excess material from the shoe edge while protecting the upper of the shoe.

4,218,797

METHOD OF MAKING FOOTWEAR

Peter J. Sbicca, 289 Lorain Rd., San Marino, Calif. 91108

Filed Feb. 5, 1979, Ser. No. 9,461
Int. Cl.[2] A43D *9/00*; A43B *5/00*
U.S. Cl. 12—142 EV 12 Claims



1. A method of making footwear having an elastomeric sole molded at room temperature and pressure to an elastic fabric upper, said method comprising:

assembling one lateral edge of a stretched loop of elastic fabric over a male footwear mold member with said one edge curled inwardly toward the molding face of said mold member;

encircling the shank portion of said male mold member with elastic bands to curl the adjacent edges of said fabric toward the opposite faces of said male mold member;

placing a charge of uncured elastomeric composition compounded to cure at room temperature and pressure in the female mold member having resilient sidewalls; and

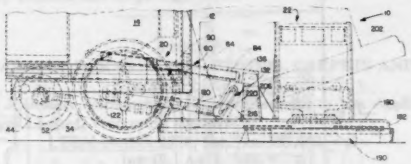
inserting said male mold member encircled with said fabric loop a predetermined distance into said female mold while said elastomeric composition cures.

4,218,798

FLOOR TREATING MACHINE

Thomas S. Block, Muskegon, Mich., assignor to Clarke-Gravely Corporation, Muskegon, Mich.

Filed Jun. 19, 1979, Ser. No. 49,883
Int. Cl.[3] A47L *11/16*
U.S. Cl. 15—49 R 30 Claims



1. A floor treating machine of the type having a frame, a ground engaging wheel supporting the frame, a brush housing enclosing a vertical axis, rotary floor treating brush and brush lift means for lifting the brush housing away from the floor and lowering the housing towards the floor, said brush lift means comprising:

a main lift arm pivoted at a rear end to the frame and at a front end to the brush housing;

a fluid operated diaphragm motor supported on the frame and engaging the main lift arm between its rear end and its front end; and

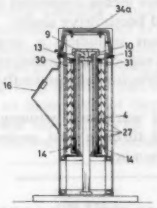
tilt means on said frame and operatively engaging said brush housing for tilting the housing about a horizontal axis in response to movement of the main lift arm as the fluid operated diaphragm motor engages and pivots the main lift arm to lift and lower the brush housing.

4,218,799

WASH-OUT APPARATUS FOR PRINTING MACHINES

Langdon R. Blight, Millswood, Australia, assignor to Alison M. Blight, Millswood, Australia

Filed Mar. 6, 1979, Ser. No. 17,891
Claims priority, application Australia, Mar. 7, 1978, 361678; Jul. 11, 1978, 503278; Nov. 27, 1978, 691278
Int. Cl.[2] A46B *11/00*
U.S. Cl. 15—77 13 Claims



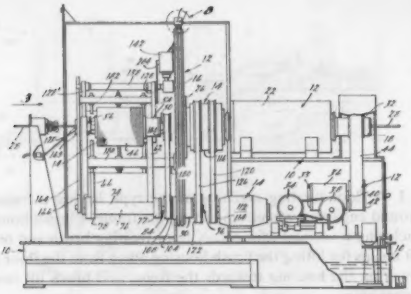
5. A flat plate wash out apparatus of a type which includes a container for holding solvent fluid, and drive means to effect a relative wash out movement between a plate held in a holder and brush means while the plate is within solvent fluid held in the container, the apparatus being characterized according to this invention in that the holder is adapted to hold any flat plate in a position in solvent fluid in the container with the plane of the plate in a vertical or substantially vertical orientation while the plate is being subjected to wash out action from the brush means which is disposed in adjacent relationship thereto to effect wash out relative movement.

4,218,800

PLANETARY GRINDER AND POLISHER

Witold C. Przygocki, Southfield, Mich., assignor to ACME Manufacturing Company, Ferndale, Mich.

Filed Mar. 16, 1979, Ser. No. 21,156
Int. Cl.³ A46B *13/02*
U.S. Cl. 15—88 **3 Claims**



1. A machine for removing scale, or the like, from the surface of wire, rod, tube or like workpiece comprising:

a support;

a planetary plate member having a central opening therethrough;

means mounting said plate member on said support;

primary drive means including an electric motor mounted on said support and connected to said plate member by belt drive for rotating said plate member;

a pair of opposed unitary and circular brush members;

brush mounting means for mounting said brush members on said plate member for rotation therewith about the axis of rotation of said plate member and for independent rotation thereon about their respective axes;

said brush mounting means including a brush drive shaft mounting each brush member, each brush drive shaft being mounted in bearing assemblies adjacent opposite ends thereof, a pair of separate housing members spaced from and substantially parallel to each of said brush drive shafts, rigid arms interconnecting the opposite ends of each of said housing members with said bearing assemblies respectively, a second drive shaft mounted within bearings within each of said housing members, means rotatably mounting each of said housing members on said plate member, belt drive means connected to said second drive shafts and to said brush drive shafts;

second drive means including a single electric motor mounted on said support and connected to said belt drive means by belt drives for independently rotating said brush members;

means guiding said workpiece between opposing faces of said brushes and through said central opening of said planetary plate member.

4,218,801

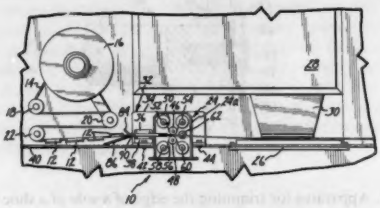
FILM GUIDE FOR USE WITH FILM CLEANING APPARATUS

James F. Stewart, Shorewood, Minn., assignor to Pako Corporation, Minneapolis, Minn.

Filed Jun. 28, 1979, Ser. No. 53,091
Int. Cl.³ B08B *11/00*
U.S. Cl. 15—100 **18 Claims**

1. For use with photographic film cleaning apparatus for cleaning photographic film transported along a path, the film cleaning apparatus being of the type having support members in opposed relationship to define a nip therebetween, the nip being disposed transverse to the path, and two lengths of soft, lint-free wiping cloth extending through the nip, the opposed surfaces of cloth at the nip defining part of the path; film guide means comprising:

first and second generally parallel, closely spaced guide plates with opposing surfaces defining an opening which is part of the path, the opening having an inlet and an outlet, and wherein the first and second guide plates are in fixed position with respect to the film cleaning apparatus with the outlet of the opening proximate the nip;



a guide wall between the first and second guide plates and essentially parallel to the path;

a first transverse guiding member extending forward and outward from the guide wall for deflecting the film toward the path;

a first member forward and above the inlet for guiding the film downward toward the inlet; and

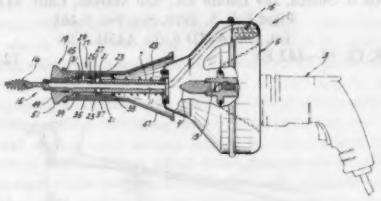
a second member forward and below the inlet for guiding the film upward toward the inlet.

4,218,802

DRAIN CLEANING APPARATUS

Larry F. Babb, La Grange, and Walter J. Noveske, Elyria, both of Ohio, assignors to Emerson Electric Co., St. Louis, Mo.

Filed Mar. 14, 1979, Ser. No. 20,370
Int. Cl.² B08B *9/02*
U.S. Cl. 15—104.3 SN **10 Claims**



1. In a drain cleaning apparatus having a guide, a flexible, elongate snake extending through the guide and being adapted to be fed into a drain pipe or the like and to be rotated for cleaning the drain pipe, means for rotating said snake and said guide, a plurality of snake engaging members movable radially toward and away from said snake between a released position in which said snake may be readily fed into or out of said guide and a gripping position in which said snake engaging members are in engagement with said snake for substantially preventing axial movement of the snake with respect to the guide, and actuating means operable during operation of said apparatus for moving said snake engaging members between their released and gripping positions, the improvement comprising: selectively operable auxiliary locking means for locking said tool engaging members in engagement with said tool, said actuating means comprising axially movable means movable to and from an axial position in which said axially movable means engage said snake engaging means and cause said snake engaging means to engage said snake, and handle means rotatably mounted with respect to said axially movable means for axially

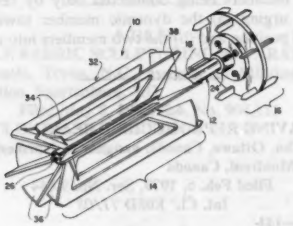
moving said axially movable means to said axial position while said snake and guide are rotating, said auxiliary locking means comprising means for locking said axially movable means in said axial position including a locking member carried on said guide and movable axially on said guide for engaging said axially movable means independent of said handle means.

4,218,803

IMPLEMENT FOR CLEANING TUBULAR CULVERTS

Jack R. Clifford, 1817 State Street, Alton, Ill. 62202

Filed May 25, 1979, Ser. No. 42,548
Int. Cl.³ B08B 9/02
U.S. Cl. 15—104.3 R **11 Claims**



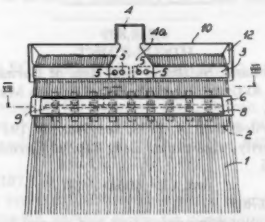
1. An implement for cleaning storm sewers, culverts and other drains and waterways having a tubular configuration, said implement comprising an elongated carriage assembly with means for cutting at its forward end and plunging means at its rearward end in spaced relationship with said cutting means, said cutting means comprising a plurality of blades radially extending from the carriage assembly, said plunging means comprising a plate having substantially the same diameter as said radially extending blades, said implement further including a first water directing means for spraying water in advance of said cutting means and a second water directing means for spraying water behind said cutting means but in advance of said plunging means whereby any dirt clogging the storm sewer or the like is prewetted by said first water directing means before it is cut loose and is further wetted by said second water directing means before it is swept forward by said plunging means.

4,218,804

CLEANING BROOM OF IMPROVED STRUCTURE

Giovanni Arinci, Via Cecinese, 56, Larciano Province of Pistoia, and Mauro Buscioni, Via Peloni, 18, Montecatini Terme Province of Pistoia, both of Italy

Filed Jan. 2, 1979, Ser. No. 452
Claims priority, application Italy, May 4, 1978, 45510 A/78
Int. Cl.² A46B 3/08
U.S. Cl. 15—174 **8 Claims**



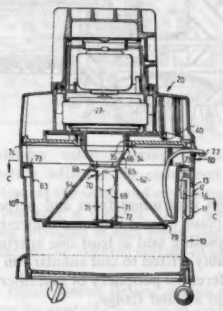
1. A cleaning broom of improved structure including a layer of bristles, a support for said layer and a support handle, characterized in that said support comprises an elongated core internal to the layer of bristles and provided with a plurality of transverse slots extending along said core, a ring arranged to wrap round said core and said layer, and provided with slots corresponding to those in said core, a pair of strips disposed on said ring and provided with lugs transversely to the strips, said two strips being mounted opposite to each other on the elongated sides of said core, each of said lugs traversing said slots in said core and in a portion of said ring, nails being inserted into said core in a direction orthogonal to said lugs so as to rigidly connect said strips to the core.

4,218,805

APPARATUS FOR CLEANING FLOORS, CARPETS AND THE LIKE

Alan J. Brazier, Birmingham, England, assignor to Vax Appliances Limited, Worcester, England

Filed Nov. 3, 1978, Ser. No. 957,408
Int. Cl.² A47L 7/00
U.S. Cl. 15—321 **4 Claims**



1. Apparatus for use in suction cleaning devices or the like comprising a container adapted for the collection of a liquid and including:

a closed bottom wall;

a lateral side wall which is circular in plan;

inlet means for connection with a suction head adapted for picking up liquid, said inlet means being disposed in the lateral side wall of the container for directing incoming air flow substantially radially inwardly;

suction inlet means for connection with a source of suction;

reservoir means for cleaning liquid in the form of an annular trough supported within the container;

means for delivering cleaning liquid from the reservoir means to suction head connected to said inlet means; and

deflector means disposed between said inlet means and said suction inlet means and surrounding the latter, said deflector means comprising an outer part of said annular trough which defines an inner wall of circular form spaced inwardly from said side wall with a lower edge spaced above the bottom wall of the container.

4,218,806

VACUUM DEVICE FOR HAIR

Bernard Cohn, 100 Princeton Ave., Bridgeton, N.J. 08302

Filed Feb. 12, 1979, Ser. No. 11,239
Int. Cl.² A47L 5/24
U.S. Cl. 15—402 **2 Claims**

1. A scalp cleaner for vacuuming particulate matter from an individual's scalp comprising:

a housing having a passage therethrough and a power supply compartment,

a motor,

a rotatable fan driven by said motor capable of creating a fluid flow through said passage to transport said particulate matter,

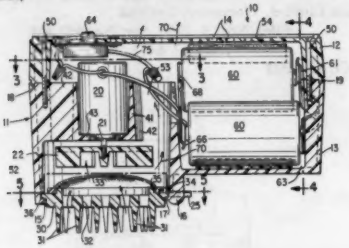
a hollow motor mount disposed within said housing passage

having a plurality of radially extending fans supporting said motor mount to said housing, said motor seated within said motor mount so that the sidewalls of said motor mount bear against said motor,

a filter mounted transverse said passage for entrapping said transported particulate matter,

an implement member having a plurality of substantially parallel teeth extending therefrom detachably mounted to said housing, said implement member having at least one aperture communicating with said passage therethrough,

an annular flange extending radially outward from said implement member, a portion of said annular flange detachably mating with a corresponding flange on said housing, said housing flange defining a semi-circle or a portion thereof,



an annular rim protruding from and perpendicular to the horizontal plane of said implement member, said annular rim encompassing said at least one aperture,

a ring detachably affixed to said annular rim so as to impinge the circumferential periphery of said filter interjacent said ring and said annular flange,

a barbed projection extending from said housing, the barb of said projection detachably engaging a portion of said annular flange when said annular flange is urged upward against said barb,

electrical contacts arranged in said power supply compartment for transmitting electrical power to said motor; and

switch means for selectively transmitting power to said motor.

4,218,807

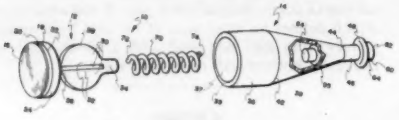
DOOR STOP

A. Ray Snow, 8706 Acorn La., Sandy, Utah 84070

Filed Dec. 22, 1978, Ser. No. 972,606

Int. Cl.[2] E05F *5/08*

U.S. Cl. 16—86 A **7 Claims**



1. A door stop assembly comprising:

a static mount member having a longitudinal axis and comprising means for anchoring the proximal end thereof to a wall, door or the like and first guide means;

a dynamic member normally having a longitudinal axis coaxial with the longitudinal axis of the static mount member and comprising impact bumper means at a cantilevered distal end thereof and second guide means forming at least one line contact with and biaxially cooperating with the first guide means, the second guide means comprising means accommodating and insuring (a) reciprocation of the dynamic member between extended and compressed positions in response to substantially axially imposed door impact as the door is opened and (b) substantially unrestrained pivoting of the dynamic member in respect to the static mount member through a substantial acute angle without binding in response to the imposition of lateral force upon the dynamic member either during or separate from said reciprocation so that the longitudinal axis of the dynamic member becomes disposed at an acute angle to the longitudinal axis of the static mount member;

means adjacent the guide means accommodating uninhibited passage of air between the atmosphere and the interior of the static mount member;

the two members being connected only by resilient bias means urging (a) the dynamic member toward its extended position and (b) the two members into axial alignment.

4,218,808

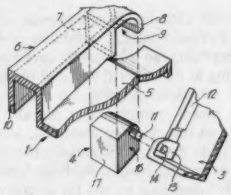
HINGE HAVING REPRODUCIBLE BEARING FRICTION

Pak-Jong Chu, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Feb. 6, 1979, Ser. No. 9,844

Int. Cl.[3] E05D *11/08*

U.S. Cl. 16—141 **9 Claims**



1. A hinge comprising first and second rigid bodies and a pair of spaced elastomer hinge members, the hinge members each having a base portion located within and having an oversize dimension relative to respective housings in the first body whereby to retain the hinge members therein, the hinge members and the second body having opposed surfaces at each of a pair of co-axial rotary mountings, the spacing from one another of the opposed surfaces of the hinge members, with the elastomers unstressed, being different from the spacing of the opposed surfaces of said second body whereby the elastomer is stressed in use to produce bearing friction, each of said mountings being provided by a first cylindrical formation extending from the opposed surface of the hinge element engaging a second cylindrical formation extending from the opposed surface of the second body, the formations being differently sized thereby naturally stressing the elastomer to produce additional bearing friction.

4,218,809

HINGE JOINT

Josef Zimmermann, Sulzbach, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 24, 1978, Ser. No. 954,193

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1977, 2747926

Int. Cl.[2] E05D *1/04*

U.S. Cl. 16—178 **7 Claims**

1. A hinge joint comprising first and second hinge half elements, said elements having identical mirror image configurations; each hinge half element having a pair of angularly related stop surfaces meeting at an apex defining the pivot axis, the corresponding stop surfaces of each hinge half element being located to abut each other when the hinge half elements

are pivoted about said pivot axis; said hinge half elements each having at least one arcuate groove formed therein defining a

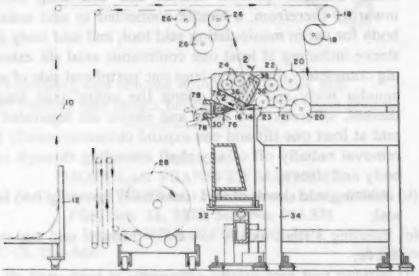
portion of a circle concentric with said axis; and an annular ring slidably received in said grooves and rotatably connecting said hinge half elements together.

4,218,810

PILE FABRIC SCULPTURING APPARATUS

Walter Engels, Tryon, N.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed May 8, 1978, Ser. No. 904,111
Int. Cl.[2] D06C *23/00, 13/00*
U.S. Cl. 26—16 **3 Claims**



1. An apparatus for trimming the pile of a fabric having areas of fibers stiffened by an adhesive and areas of unstiffened fibers comprising: a frame, blade cutter means pivotally mounted on said frame, means to supply pile fabric to be trimmed into cutting relationship to said cutting means and a second means mounted adjacent to said cutting means to maintain the fabric into contact with said cutting means, said second means including a substantially cylindrical elongated member having a body portion with gripping means thereon to counteract the drag of the blade of said cutting means on the pile fabric being trimmed, said substantially cylindrical member having a first recessed portion at one end thereof adapted to contact the selvedge of the pile fabric and having a diameter smaller than the diameter of said body portion, said gripping means including a plurality of threads formed in said recessed portion with a pitch opposite to the drag on the pile fabric imposed thereon by the blade of said cutting means to cause the selvedge of the pile fabric to be directed outwardly from said body portion.

4,218,811

METHOD FOR REPAIRING DAMAGED BLEEDER VALVE APERTURES

Thomas C. Sawyer, 19435 Lancashire Rd., Detroit, Mich. 48223

Division of Ser. No. 659,653, Feb. 20, 1976, Pat. No. 4,103,762.
This application Apr. 5, 1978, Ser. No. 893,698
Int. Cl.[2] B23P *7/00*
U.S. Cl. 29—157.1 R **4 Claims**

1. In a disc brake caliper having a piston movably disposed within said housing, passage means for conducting pressurized hydraulic fluid to said piston so as to actuate said piston, a bleeder passage communicating between said passage means and a bleeder valve aperture, said bleeder valve aperture opening outwardly of said housing, and having a threaded portion adjacent the outer end thereof and a valve seat disposed adjacent the inner end of said threaded portion, said bleeder valve seat being integrally formed in said disc brake caliper, a method of repairing said bleeder valve aperture comprising:

removing said disc brake caliper from said motor vehicle;

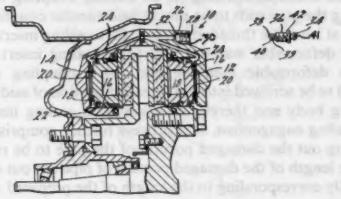
disassembling said caliper and removing said piston;

increasing the diameter and length of said bleeder valve aperture by a drilling operation, said drilling operation removing said valve seat;

accurately sizing said bleeder valve aperture;

cleaning said disc brake caliper so as to remove any metal particles resulting from said drilling and sizing operations; and

providing a new bleeder valve seat comprising a generally cylindrical repair sleeve device, said repair sleeve device



having a bleeder valve opening therein including a threaded portion adjacent the outer end thereof and a valve seat adjacent the inner end of said threaded portion, threadedly inserting a bleeder valve into said bleeder valve opening provided in said repair sleeve device,

applying a sealant to the external surface of said repair sleeve device; and

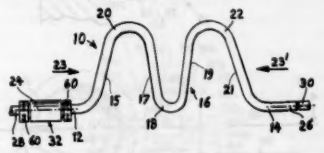
installing said repair sleeve device within said accurately sized aperture by applying a force to said bleeder valve, said sealant being operative to create a sealing relationship between said caliper and said repair sleeve device whereby said repair sleeve device will be retained within said aperture and operate to provide a new valve seat for the bleeder valve.

4,218,812

METHOD AND MEANS FOR RAPID REPLACEMENT OF DAMAGED PIPE SECTIONS

Arne Jönsson, Torshälla, Sweden, assignor to NYBY Bruk AB, Sweden

Continuation-in-part of Ser. No. 738,900, Nov. 4, 1976, which is a division of Ser. No. 427,125, Dec. 21, 1973, abandoned. This application Feb. 8, 1979, Ser. No. 10,421
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1972, 2263002
Int. Cl.[2] B22D *19/10*
U.S. Cl. 29—402.12 **5 Claims**



1. A method for rapidly repairing damaged portions of conduits snd pipes which are difficult or impossible to weld, such as oil pipes, in particular on oil tankers, and long-distance heating pipes, water, gas or similar supply pipes, in particular of large diameter, said method comprising storing in the vicinity of the pipe to be repaired prepared replacement pipe sections, each replacement pipe section having two substantially straight end portions which are provided with two associated

quick-action unions, said straight end portions being parallel to each other and interconnected by a resilient intermediate portion formed of a plurality of bends extending substantially in a common plane aligned with the center axis of said straight end portions, each of said straight end portions adjoining one of said plurality of bends, each of said adjoining bends extending from the center axis of a respective straight end portion in the same direction and having about the same size and the same radius of curvature, and said resilient intermediate portion having a middle bend between said adjoining bends which is of the same curvature as said adjoining bends, said middle bend being connected to each of said adjoining bends by a straight segment extending from said adjoining bends so far beyond the center axis of said straight end portions as to enable movement of said two substantially straight end portions towards and away from each other while remaining parallel to each other, and each union comprising (a) an annular coupling body for bridging the pipe ends to be joined, said annular coupling body having at least one threaded portion, (b) a sealing insert formed from a deformable material, and (c) a sealing insert formed from a deformable material, and (c) a coupling member adapted to be screwed into the threaded portion of said annular coupling body and thereby compress said sealing insert into pipe sealing engagement, said process further comprising:

cutting out the damaged portion of the pipe to be repaired, the length of the damaged portion of pipe cut out substantially corresponding to the length of the prepared replacement pipe section,

inserting between the ends of the remaining parts of the damaged pipe said prepared replacement pipe section with the substantially straight end portions thereof in substantial alignment with the ends of the remaining parts of the damaged pipe, and

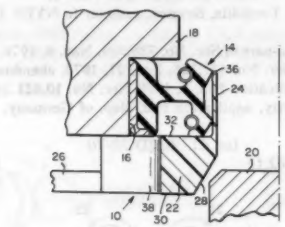
establishing a sealed connection between said prepared replacement pipe section and the remaining parts of the damaged pipe.

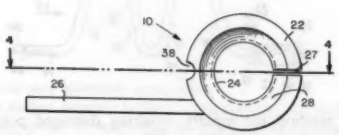
4,218,813

METHOD AND TOOL FOR INSTALLING SHAFTS THROUGH SEALS

Douglas A. Cather, Jr., Gastonia, N.C., assignor to Garlock Inc., Longview, Tex.

Filed Jan. 31, 1979, Ser. No. 8,061
Int. Cl.[2] B23P *11/02, 19/02*
U.S. Cl. 29—450 **25 Claims**





1. An installation tool for preventing damage to the lip or lips of a shaft seal mounted in a bore of a housing, during installation of a shaft through the housing bore and seal, said installation tool comprising:

(a) an annular body having a shaft lead-in surface on at least a radially inner portion of an axially outer radial surface thereof, said lead-in surface tapering both radially and axially inwardly;

(b) a lip protection sleeve connected to said body adjacent an inside diameter portion thereof and extending axially inwardly therefrom;

(c) a handle connected to said annular body for use in manipulating said tool; and

(d) said body and sleeve including at least one continuous axial slit extending completely through at least one peripheral side of said annular body and sleeve along the entire axial length thereof, whereby said body and sleeve are separated at said at least one slit and can expand circumferentially for removal radially off of any shaft extending through said body and sleeve.

17. A method for preventing damage to the lip or lips of a shaft mounted in a bore of a housing, during installation of a shaft through the housing bore and seal, said method comprising:

(a) providing an installation tool comprising an annular body having a shaft lead-in surface on at least a radially inner portion of an axially outer radial surface thereof, said lead-in surface tapering both radially and axially inwardly; a lip protection sleeve connected to said body adjacent an inside diameter portion thereof and extending axially inwardly therefrom; a handle connected to said annular body for use in manipulating said tool; and said body and sleeve including at least one continuous axial slit extending completely through at least one peripheral side of said annular body and sleeve along the entire axial length thereof, whereby said body and sleeve are separated at said at least one slit and can expand circumferentially for removal radially off of any shaft extending through said body and sleeve;

(b) inserting said sleeve of said tool axially inwardly into said seal;

(c) inserting a shaft axially inwardly through said seal and sleeve;

(d) moving said tool axially outwardly at least until all of said sleeve is located axially outwardly of the axially outermost lip of said seal; and

(e) moving said tool radially away from said shaft by circumferentially expanding said body and sleeve by virtue of said at least one slit to allow such radial removal.

4,218,814

METHOD OF INSULATING CONDUIT

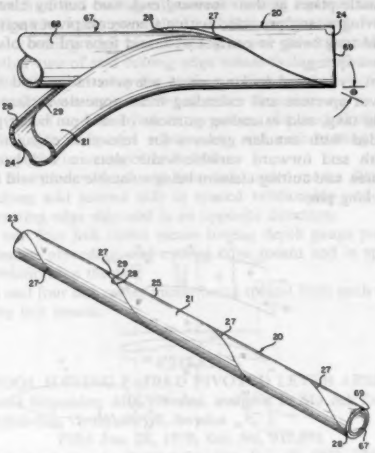
Norbert J. Hodapp, Smoke Rise, N.J., assignor to Dart Industries Inc., Los Angeles, Calif.

Division of Ser. No. 843,609, Nov. 19, 1977, abandoned. This application Apr. 9, 1979, Ser. No. 28,430
Int. Cl.[3] B23P *11/02*
U.S. Cl. 29—450 **10 Claims**

1. The method of insulating a conduit having an outside diameter and a length including the steps of:

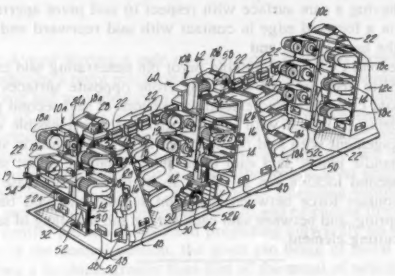
(a) selecting an elongate flexible tubular sheath having a length and having an inside diameter not greater than the outside diameter of said conduit;

(b) forming a longitudinal slit through said sheath from end to end;



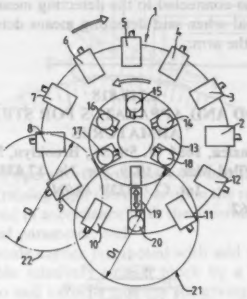
(c) encasing said conduit within said sheath; and
(d) rotating said sheath helically relative to said conduit.

4,218,815
MODULAR TRANSFER MACHINE
Noel N. Cumming, 732 Pierce, Birmingham, Mich. 48009
Filed Sep. 18, 1978, Ser. No. 943,335
Int. Cl.[3] B21B *39/00*; B23Q *7/03*
U.S. Cl. 29—563 **6 Claims**



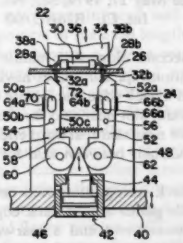
1. A transfer machine comprising:
at least one machine module, said module including a base housing having a pair of upwardly extending opposite sides;
a plurality of work heads comprising individually movable slides carrying drive motor spindles and tooling driven thereby mounted on the surface of each of said housing sides, each of said plurality of work heads being spaced apart up and down on said base housing opposite sides and being oriented on either side of a central region of each of said base housing sides, each of said work heads tooling disposed to perform operations on workpieces disposed in said central region;
transfer means for successively transferring workpieces through each of said central regions of said at least one module base housings into work stations located opposite said work head tooling.

4,218,816
MACHINE TOOLS
Erich Dormehl, Giessen, Fed. Rep. of Germany, assignor to Heyligenstaedt & Comp. Werkzeugmaschinenfabrik GmbH, Giessen, Fed. Rep. of Germany
Filed Jul. 10, 1978, Ser. No. 923,237
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1977, 2737225
Int. Cl.[3] B23Q *3/155*
U.S. Cl. 29—568 **12 Claims**



1. A machine tool, comprising:
means for mounting a workpiece along a first axis;
a first set of tools;
a rotatably indexable turret including means for clamping said first set of tools each clamped tool being selectively engageable with said workpiece so as to machine said workpiece in a predetermined manner;
a second set of tools;
a drum magazine for storing said second set of tools;
said turret and said drum magazine being coaxially disposed with respect to each other along a second axis parallel to said first workpiece axis; and
means for selectively conveying particular tools of said first and second sets of tools in one continuous rectalinear movement along a substantially radial direction with respect to said second axis directly between said turret and said drum magazine.

4,218,817
COMPONENT MOUNTING APPARATUS
Hiroji Takano, Yawata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Sep. 7, 1978, Ser. No. 940,509
Claims priority, application Japan, Sep. 19, 1977, 52-112805
Int. Cl.[2] H05K *3/32*
U.S. Cl. 29—741 **7 Claims**



1. An apparatus for mounting electric components, each having a body portion and a plurality of terminal wires extend-

ing from said body portion, on a side of a circuit board comprising:

clinching means operatively provided below the circuit board for bending the terminal wires extending outwardly from the circuit board on the side thereof opposite to the side on which the electric component is mounted, said clinching means having at least one pair of movable arms which come into contact with the terminal wires;

means on said clinching means for detecting stress set up in each of the arms upon contact between the arm and the terminal wire; and

circuit means connected to the detecting means for producing a signal when said detecting means detects the stress set up in the arm.

4,218,818

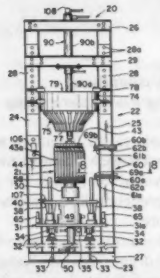
METHOD AND APPARATUS FOR STRIPPING ARMATURES

Leonard J. Panzica, 1654 W. 5th St., Brooklyn, N.Y. 11223

Filed Mar. 5, 1979, Ser. No. 17,438

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—762 **11 Claims**



1. Apparatus for stripping a wound slotted member such as an armature having coil segments extending in its slots, comprising stripping means including a plurality of stripping blades supported in an array relative to an axis, with each blade spaced a predetermined distance from said axis, means for supporting a wound slotted member coaxially with said array of stripping blades, means for cutting the winding circumferentially about the slotted member to cut the coil segments extending in the slots of the slotted member, and means for mutually displacing said slotted member and said array of blades toward each other so that each of said blades enters a slot of the slotted member and forces the coil segment out of the same.

4,218,819

SPRING LOCKED DISASSEMBLY FOLDING KNIFE

Paul S. Phelps, 1306 Woodlawn Dr., Maryville, Tenn. 37801

Filed May 17, 1979, Ser. No. 39,959

Int. Cl.³ B26B *5/00*

U.S. Cl. 30—157 **4 Claims**

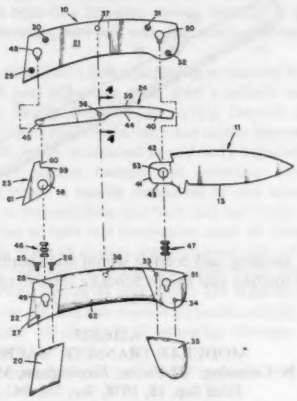
1. First and second elongated handle plates for parallel, spaced apart relationship, said plates having a forward end, a rearward end and a back edge, each plate being provided with a first variable width slot near said forward end and a second variable width slot near said rearward end, and a pivot-receiving opening equidistant between said forward and rearward slots;

an elongated back spring interposed between said first and second handle plates at said back edge, said back spring having a forward end and a rearward end, and being provided with a transverse hole midway between said forward and rearward ends;

a pivot passing through said transverse hole in said back spring for engagement with said pivot-receiving openings of said handle plates;

a cutting element interposed between said first and second handle plates at their forward end, said cutting element having a tang provided with a transverse pivot aperture, said tang being in contact with said forward end of said back spring;

a first cylindrical locking pivot pin penetrating said tang pivot aperture and extending from opposite surfaces of said tang, said extending portions of said pin being provided with annular grooves for releasible engagement with said forward variable-width slots in said handle plates, said cutting element being rotatable about said first locking pin;



a rotatable cam plate interposed between said first and second handle plates at their rearward end, said cam plate being provided with a transverse pivot aperture, and having a cam surface with respect to said pivot aperture on a forward edge in contact with said rearward end of the back spring; and

a second cylindrical locking pivot pin penetrating said cam plate aperture and extending from opposite surfaces of said cam plate, said extending portions of said second pin being provided with annular grooves for releasible engagement with said rearward variable width slots in said handle plates, said cam plate being rotatable about said second locking pin to effect an increase or decrease in contact force between said cam surface and said back spring, and between said back spring and said tang of said cutting element.

4,218,820

HAND-ACTUATED CHAIN SAW

William Cleva, 502 Commack Rd., Commack, N.Y. 11725

Filed Mar. 27, 1979, Ser. No. 24,414

Int. Cl.³ B27B *21/00, 33/14*

U.S. Cl. 30—166 R **6 Claims**

1. A link articulated reciprocatable elongated chain saw having a plurality of zones possessing the capability of cutting in either of two directions comprising:

(a) a first surface, a second surface, a first side and a second side;

(b) each zone having at least four link cutter means in elon-

gate spaced relationship from each other and having upstanding cutting edge means along said first surface and spaced therefrom;

(c) each of said cutting edge means having a planar cutting edge essentially parallel to said first surface with two of said cutting edge means facing in one direction and the other two of said cutting edge means facing in the opposite direction whereby cutting action ensues when said chain saw is reciprocated in either direction;

(d) two of said four link cutter means disposed along said first side in spaced relationship and each cutting edge disposed in an opposite direction;

(e) the other two of said four link cutter means disposed along said second side in spaced relationship and each cutting edge disposed in an opposite direction;

(f) said four link cutter means having depth gauge portion means preceding said cutting edge means and in spaced relationship thereto;

(g) said four link cutter means being spaced from each other by link means.

4,218,821

TOOL HAVING PAIRED PIVOTED LEVER ARMS

Gerhard Schneider, Alta, Sweden, assignor to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Filed Jun. 28, 1978, Ser. No. 919,891
Claims priority, application Sweden, Jun. 29, 1977, 7707550
Int. Cl.[2] B26B *13/28;* B25B *7/06*
U.S. Cl. 30—254 **21 Claims**

1. A tool having a pair of lever arms pivotably attached together by a pivot pin, each lever arm having holder means at one end and tool-functional means at the other end on opposite sides of the pivot pin, for pivotable manipulative engaging movement of the tool-functional means by the holder means, comprising first and second metallic lever arms; the first lever arm having a through slot receiving the second lever arm; the second lever arm having a central portion extending within the slot and a pivot pin immovably fixed to and extending through the central portion thereof and projecting outwardly on each side of the central portion; the pivot pin being of metal and having a hardness greater than that of the metal of which the lever arms are made; the projecting portions of the pivot pin defining pivot points for the pin; the pivot points of the pivot pin being cold-pressed into the walls of the first lever arm within the slot, thereby defining in the walls cold-formed pivot sockets conforming in shape to the pivot points in a manner to pivotably mount the second lever arm on the first lever arm in the slot, for free pivoting movement with respect thereto, guided and constrained by the walls of the slot.

4,218,822

VISUAL-DISPLAY DEVICE WITH ERROR CORRECTION

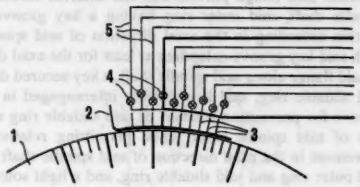
Piero M. Derossi, Corso Giovanni Lanza 55, Torino, Italy

Filed Dec. 28, 1978, Ser. No. 974,050
Claims priority, application Italy, Dec. 30, 1977, 69958 A/77
Int. Cl.[2] G02B *27/02*
U.S. Cl. 33—1 D **7 Claims**

1. A device for visually displaying a variable quantity with correction of reading errors due to changes in an independently ascertainable external parameter, comprising:

an opaque block provided with a viewing face and with a multiplicity of closely juxtaposed slits terminating at said viewing face;

light-emitting means for individually illuminating an end of any one of said slits remote from said viewing face;



control means operatively coupled with said light-emitting means for training light therefrom upon the remote end of a slit selected in accordance with the ascertained value of said external parameter; and

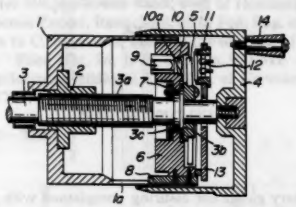
a graduated scale carrier juxtaposed with said viewing face and movable relatively to said block by a force corresponding to said variable quantity for giving a reading of the latter by the coaction of any illuminated slit with the graduations of said carrier.

4,218,823

DIGITAL MICROMETER

Sakuzo Matsumoto, Hachioji; Taizo Morimoto, Tokyo, and Testuo Fujie, Yokohama, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 764,289, Jan. 31, 1977, abandoned. This application Jun. 12, 1978, Ser. No. 914,728
Claims priority, application Japan, Feb. 6, 1976, 51-12745[U]
Int. Cl.[2] G01B *3/18, 7/02*
U.S. Cl. 33—166 **1 Claim**



1. A digital micrometer comprising an outer ring having a micro internal thread, an axially elongated spindle shaft extending through said outer ring and having an external thread thereon screwed into said internal thread, said external thread extending for only a portion of the axial length of said spindle shaft, said spindle shaft having a flange portion extending radially outwardly therefrom and spaced axially from the external thread thereon, said flange portion formed integrally with said spindle shaft, an annular disc-shaped scale plate extending transversely of said spindle shaft and comprising a radially inner portion and a radially outer portion and said outer portion having a scale extending around a portion of transversely extending surface thereof adjacent the periphery of said plate, the scale on said outer portion is located in a plane axially adjacent to said flange portion and is positioned on the opposite side of said flange portion from said external thread, the radially inner portion of the scale plate is rigidly secured directly to the flange portion of said spindle shaft with the

surface of said scale being perpendicular to the spindle shaft so that said spindle shaft, said flange portion and said scale plate rotate as a unit, a slidable ring extending transversely of said spindle shaft and mounted on and encircling said spindle shaft so that said spindle shaft can rotate relative to said slidable ring, said slidable ring located adjacent to the location of the securement of said scale plate to said flange portion with at least an axially extending portion of said slidable ring located between said flange portion and the external thread on said spindle shaft, said outer ring having a key groove formed therein extending in the axial direction of said spindle shaft with said key groove extending at least for the axial dimension of said flange along said spindle shaft, a key secured directly to said slidable ring, said key slidably interengaged in said key groove for preventing rotation of said slidable ring about the axis of said spindle shaft while permitting relative sliding movement in the axial direction of said spindle shaft between said outer ring and said slidable ring, and a light source member and a light receiving member secured to said slidable ring and each positioned on an opposite side of said scale plate and spaced apart in the axial direction of said spindle shaft for sandwiching the scale of said scale plate.

4,218,824

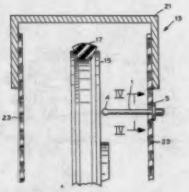
GUARD OPENING GAUGE

Deane R. Schaefer, 1847 N. Second Ave., Upland, Calif. 91786

Continuation-in-part of Ser. No. 925,459, Jul. 17, 1978, abandoned. This application Mar. 29, 1979, Ser. No. 25,193

Int. Cl.[2] G01B *3/46, 5/18*

U.S. Cl. 33—169 B **2 Claims**



1. A unitary gauge for assuring compliance with pre-established safety requirements for guards for moving parts of machinery wherein each of a plurality of different pre-established maximum guard opening sizes has associated therewith a pre-established minimum distance from the guard to any moving part of the machinery associated therewith, said unitary gauge comprising:

(a) a shaft;

(b) a first nub on one end of said shaft being of circular cross-section normal to the longitudinal axis of said shaft and having a diameter equal to one of the pre-established maximum guard opening sizes;

(c) a first stop plate disposed on said shaft and normal thereto at the pre-established minimum distance from said nub which is associated with said one of the pre-established maximum guard opening sizes, said first stop plate being a disc having a maximum diameter greater than said one of the pre-established maximum guard opening sizes equal to a second of the pre-established maximum guard opening sizes.

4,218,825

METHOD AND APPARATUS FOR DETERMINING AXES OF CYLINDRICAL BLANKS

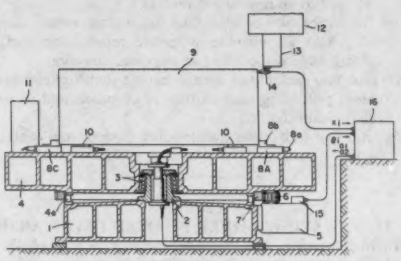
Kouichi Asakura, Tokyo, and Makoto Sagara, Shizuoka, both of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 4, 1978, Ser. No. 965,780

Claims priority, application Japan, Dec. 5, 1977, 52-145827

Int. Cl.[3] G01B *7/31*

U.S. Cl. 33—174 Q **8 Claims**



1. Apparatus for determining an axis of a cylindrical blank mounted on a turntable comprising:

means for mounting said cylindrical blank on said turntable with the axis of the former positioned near that of the latter;

means for measuring angles between a reference point on the periphery of said cylindrical blank and at least three measuring points on said periphery which are circumferentially spaced from said reference point;

means for measuring deviations of the periphery of said blank from a circle about the axis of said turntable at said measuring points;

means for calculating an axis at which dispersion of said deviations at said measuring points is a minimum thereby determining the distance between the axis of said cylindrical blank and the axis of said turntable;

press members mounted on said turntable to be movable toward and away from the axis of said turntable; and

control means responsive to said calculated axis for actuating said press members for moving said blank on said turntable by said distance so as to coincide the axis of said cylindrical blank with the axis of said turntable;

said calculating means comprising:

a counter for counting the number of said measuring points;

means for determining a mean value of said deviations measured at a plurality of measuring points;

an analyzer for analyzing θ (where θ represents the angle between said reference point and any one of said measuring points) into cos θ and sin θ;

means for determining a mean value of a plurality of cos θ's and a plurality of sin θ's;

first memory means for storing said deviations;

second memory means for storing said cos θ's and said sin θ's produced by said analyzer;

a first comparator for determining the difference between said mean value of the deviations and respective deviations stored in said first memory means;

a second comparator for determining the difference between said mean values of a plurality of cos θ's and of a plurality of sin θ's and of a plurality of sin θ's and said cos θ's and sin θ's stored in said second memory means;

means responsive to the outputs of said first and second comparators for determining the amount of movement of said press members necessary to coincide the axis of said blank with the axis of said turntable; and

means responsive to said amount of movement for applying

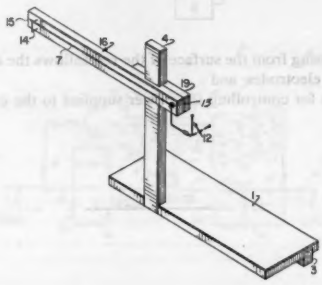
an instruction to said press members so as to move them by said amount of movement.

4,218,826

RADIAL ARM SAW ALIGNMENT TOOL

James G. Duke, P.O. Box 377, Imperial, Saskatchewan, Canada (S0G 2J0)

Continuation-in-part of Ser. No. 885,491, Mar. 24, 1978, abandoned. This application Jan. 15, 1979, Ser. No. 3,750
Claims priority, application Canada, Nov. 8, 1977, 290475
Int. Cl.³ G01B 5/25
U.S. Cl. 33—185 R **6 Claims**



1. For use with a radial arm saw which includes a table, a fence slot therein, a radial arm situated above said table and a saw blade operatively connected to the radial arm and being positionable in a vertical fore and aft relationship with the table when in the normal perpendicular position and parallel to the table when in a horizontal position; a gauge assembly for checking the alignment of the saw blade relative to the table, said gauge assembly including a base, means on said base operatively engaging the associated fence slot in said table for fore and aft sliding movement relative to said table, a vertical support extending upwardly from said base and an indicating assembly mounted for selective vertical movement to said vertical support, said indicating assembly including a horizontal support extending parallel to said base and an indicating arm pivotally mounted intermediate the ends thereof to said horizontal support, said indicating arm having a saw blade face engaging end and a dial indicating finger at the other end, said saw blade face engaging end being angularly adjustable, whereby the alignment of the saw blade relative to the table may be checked perpendicularly and fore and aft when said blade is situated perpendicular to the table and horizontally when said blade is situated horizontal to the table, and a dial scale on said horizontal support traversed by said indicating finger.

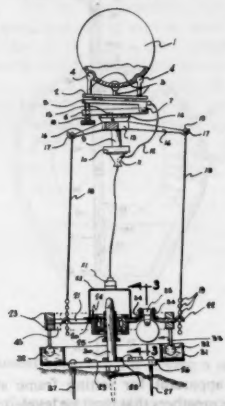
4,218,827

GYROSCOPIC AIMING METHOD AND SYSTEM FOR SUSPENSION SYSTEM THEREFOR

Marius E. Huvers, Ste-Thérese, Canada, assignor to Canadair Limited, Montreal, Canada

Filed May 4, 1979, Ser. No. 36,147
Int. Cl.³ G01C 19/36
U.S. Cl. 33—318 **19 Claims**

1. A gyroscopic aiming system for a navigable body comprising a connection device removably securable to said body, a level platform assembly joined to said connection device and including a level reference platform, a gyroscopic assembly having a gyroscopic input axis operatively pointing approximately in the East direction, a suspension assembly having an upper end rotatively connected to said level reference platform and angularly settable in azimuth relative to the latter for bodily rotation in azimuth therewith and a lower end pivotally suspending said gyroscopic assembly and rotatively restraining the latter in azimuth relative to said upper end, an anchoring base fixedly securable relative to the ground and including a pivot connection operatively engaging said lower end, laterally restraining the latter, and constructed and arranged for azimuth rotation and pitch and roll pivoting of said lower end, and an azimuth direction indicator assembly operatively associated to said upper end portion and said level reference platform and indicating the relative azimuth aiming directions of



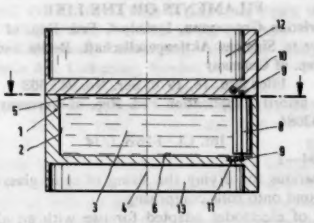
said level reference platform, navigable body, and suspension assembly whereby deviation of the navigable body from the predetermined azimuth aiming direction produces azimuth deviation of the input axis of the gyroscopic assembly from the East direction and measurement of said deviation by the gyroscopic assembly for corresponding correction of the aiming direction of the navigable body.

4,218,828

DEVICE FOR MEASURING THE TIGHTENING ANGLE ON A WRENCH

Johann-Peter Höting; Armin Rahn, both of Hamburg, and Hermann-Jochen Zerver, Remscheid, all of Fed. Rep. of Germany, assignors to C. Plath KG, Hamburg, Fed. Rep. of Germany

Filed Dec. 26, 1978, Ser. No. 973,311
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1977, 2758703
Int. Cl.³ G01C 9/18
U.S. Cl. 33—334 **14 Claims**



1. An improved device for measuring the tightening angle on a wrench with respect to a directionally fixed member pivoted in a housing thereupon for the indication of a reference direction, of the type in which the directionally fixed member is a body possessing a high moment of inertia relative to the frictional moment of its pivotal mounting, wherein the improvement comprises:

an inertial body of liquid; and

means for determining the relative motion of the liquid with respect to the housing.

4,218,829

FRAME-SETTING APPARATUS

William K. Wightman, 1034 Rimpau, Corona, Calif. 91720

Filed Apr. 16, 1979, Ser. No. 30,011
Int. Cl.³ G01C *9/32*
U.S. Cl. 33—348 **2 Claims**

1. A level apparatus for setting frame structures having opposite frame members that must be leveled and positioned in parallel relation to each other, either vertically or horizontally, wherein the apparatus comprises:

a level defined by an elongated frame member;

a plurality of spirit-level units mounted longitudinally along said level frame member in spaced relation to each other, wherein at least one of said units is positioned longitudinally from said frame, and at least one unit is positioned transversely from said frame whereby said level is adapted to be used vertically or horizontally;

a space section defined between each of said spirit level units;

a plurality of reflective members defined by mirror sections disposed within said space sections;

a reference line centrally disposed and longitudinally positioned along the full length of each reflective member to provide a reference alignment line for the corresponding reflective frame member when sighted in said mirrors.

4,218,830

DEVICE FOR DRYING THE SIZING OF SPUN GLASS FILAMENTS OR THE LIKE

Hans-Christian Grassmann, Igelsdorf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 18, 1978, Ser. No. 943,303
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1977, 2742086
Int. Cl.² F26B *3/34*
U.S. Cl. 34—1 **2 Claims**

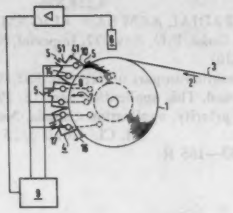
1. Apparatus for drying the sizing of spun glass filaments being wound onto rolls comprising:

groups of electrodes adapted for use with an alternating potential and disposed about a roll transversely to the direction of a filament being wound onto the roll;

a housing having chambers, each of which is associated with each group of electrodes and which extends towards the roll so as to enclose the electrodes, each chamber being open towards the roll and having a gap between itself and the roll, while being hingedly joined to at least one adjacent chamber;

a separate line for blowing hot air at more than 100° C. into each chamber;

means for jointly moving each chamber and the associated electrode group to control the spacing of the electrodes from the surface of the roll, whereby the spacing of the



housing from the surface of the roll follows the spacing of the electrodes; and

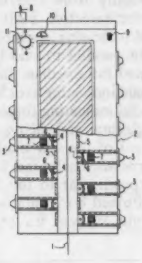
means for controlling the power supplied to the electrodes.

4,218,831

CONTINUOUS ULTRAVIOLET CURING SYSTEM

Robert D. Harris, Saltville, and Norman G. Haderer, Bristol, both of Va., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 28, 1978, Ser. No. 964,314
Int. Cl.³ F26B *23/04, 3/28*
U.S. Cl. 34—4 **17 Claims**



1. An electromagnetic curing system for curing a resinous coating on an elongated member comprising

(1) a curing chamber through which said elongated member passes;

(2) a plurality of modules alternately positioned in said curing chamber on opposite sides of said elongated member, each module containing a source of electromagnetic radiation directed at said elongated member, the number of said modules exceeding the number necessary to cure said resinous coating on said elongated member when all of said sources of electromagnetic radiation are on, each module being removable from said curing chamber from a side other than the side facing said elongated member, so that each module can be replaced during the operation of said electromagnetic curing system without stopping its operation;

(3) means for individually turning on and off each of said sources of electromagnetic radiation.

4,218,832

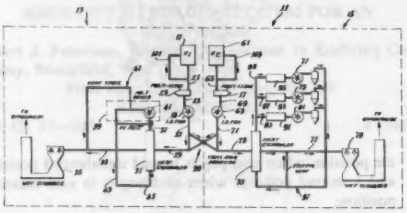
APPARATUS FOR PROCESSING WOOD PRODUCTS USING HEAT FROM A BOILER FOR INDIRECTLY HEATING DRYING GAS

Vernon E. Daniels, Eugene, Oreg., assignor to Champion International Corporation, Stamford, Conn.

Continuation of Ser. No. 784,076, Apr. 4, 1977, abandoned. This application Apr. 27, 1979, Ser. No. 33,732

Int. Cl.[2] F26B *3/04, 21/04*

U.S. Cl. 34—79 3 Claims



1. Apparatus for processing wood products, comprising:

a boiler for use in processing wood products and including an exhaust outlet through which warm exhaust gases may leave said boiler;

a gas-to-gas heat exchanger having a first inlet thereof flowably coupled with said exhaust outlet of said boiler for receiving said warm exhaust gases from said boiler, said heat exchanger further having a second inlet and a first outlet and operable to heat a drying gas passing into said heat exchanger through said second inlet and out of said heat exchanger through said first outlet using heat from said exhaust gases from said boiler, said heat exchanger having a second outlet through which said exhaust gases from said boiler may exit from said heat exchanger;

drying means for receiving the drying gas from said heat exchanger and drying said wood products using said drying gas, said drying means including an inlet and an outlet therein through which said drying gas may pass, said drying inlet being flowably coupled with said first outlet of said heat exchanger, said outlet of said drying means carrying water vapor removed from said wood products and being flowably coupled with said second inlet of said heat exchanger;

means operably coupled between said exhaust outlet of said boiler and said first inlet of said heat exchanger for cleaning said exhaust gases of fly ash and cinders; and

vent means for carrying water vapor away from said drying means, said vent means being flowably coupled with said outlet of said drying means and with said second outlet of said heat exchanger for diverting a portion of the drying gas returning to said heat exchanger from said drying means and,

a wet scrubber coupled with said second outlet of said heat exchanger, said vent means coupling said wet scrubber with said drying means, said scrubber being operable for removing residual particulate matter from the gases delivered thereto from said drying means and said heat exchanger.

4,218,833

FLOAT TREATMENT APPARATUS

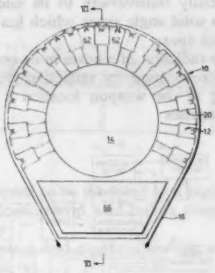
Ronald Coar, Ilkley, England, assignor to Spooner Edmeston Engineering Limited, Ilkley, England

Filed Jan. 26, 1979, Ser. No. 6,768

Claims priority, application United Kingdom, Jan. 27, 1978, 3312/78

Int. Cl.[2] F26B *13/20*

U.S. Cl. 34—156 5 Claims



1. A float treatment apparatus for drying a paper with gas comprising

(a) a plurality of separate but adjacent nozzle arrays, each nozzle array comprising a plurality of nozzle pairs disposed in generally U-shaped curved arcs that have a curvature approximating at least half of a circle, adjacent nozzle arrays being U-shaped in opposite directions and being arranged and positioned with respect to each other so that a paper web passing thereover will move in a serpentine path that takes it around a more than 180° circumferential portion of an array,

(b) each nozzle pair in each array being of the Coanda type and having lip surfaces extending in opposite directions from the point where gas exits through each nozzle pair, whereby the gas exiting from each nozzle pair flows in opposite circumferential directions, and

(c) a plurality of gas outlets, each outlet being located between the outer lip edges of adjacent nozzles pairs said outlets extending radially inwardly and being adapted to receive the streams of gas flowing toward each other over the lip surfaces of adjacent nozzle pairs.

4,218,834

SCORING OF SIMULATED WEAPONS FIRE WITH SWEEPING FAN-SHAPED BEAMS

Hans R. Robertsson, Jönköping, Sweden, assignor to Saab-Scania AB, Linkoping, Sweden

Filed Feb. 22, 1979, Ser. No. 14,115

Claims priority, application Sweden, Mar. 2, 1978, 7802350

Int. Cl.[3] F41F *27/00*; F41G *3/26*

U.S. Cl. 35—25 12 Claims

1. A method of scoring simulated firing of a weapon against a target which comprises a reflector whereby radiation such as that of a laser is reflected back in the direction opposite to the one from which it arrived at the reflector, said method being characterized by:

A. beginning at the instant of simulated firing of the weapon, generating at the weapon location a calculated trajectory output which substantially signifies the position that a hypothetical projectile would have in its trajectory at successive instants if it had been fired from the weapon at the instant of simulated firing and which comprises

(1) calculated range magnitudes related to the location of the weapon at said instant, and

(2) other calculated position magnitudes which are related to a predetermined axis extending from the weapon

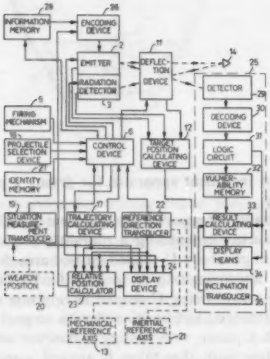
generally in a direction in which the trajectory is oriented;

B. emitting radiation from the weapon location in the form of at least two fan-shaped beams, each having a long cross-section dimension which increases with increasing distance from the weapon location and a narrow cross-section dimension transverse to said long dimension,

(1) said long dimension of every beam at an angle to that of every other beam, and

(2) each of said at least two beams being swept angularly, substantially transversely to its said long dimension, across a solid angle space which has the weapon location at its apex;

C. each time radiation of a beam in its sweep is returned to the weapon location by reflection from said reflector, generating at the weapon location a measured output which comprises



(1) a range magnitude

(a) which is determined on the basis of time elapsed between emission of radiation and detection of the reflection thereof at the weapon location and

(b) which is a function of the distance between the reflector and the weapon location and is thus comparable with said measured range magnitude, and

(2) a beam angle magnitude which is a function of the then-existing angular position of the beam and which is related to said axis and is thus comparable with at least one of said other calculated position magnitudes; and

D. from time to time comparing one of said measured magnitudes with the comparable calculated magnitude so that when a predetermined relationship between the compared magnitudes is found to exist, the remaining calculated magnitudes can be compared for scoring purposes with the remaining measured magnitudes.

4,218,835

ANIMAL SCALE TOY

Takeo Iseki, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Aug. 11, 1978, Ser. No. 932,769

Int. Cl.[2] G09B *19/02, 23/02*

U.S. Cl. 35—31 R **10 Claims**

1. A toy balancing device of the type having a base and a support extending from the base, a balance bar pivotally supported on said support, the improvement which comprises:

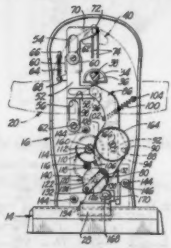
one of said support and said balance bar having a pivot support means to pivotally support said balance bar on said support;

a balance bar locking-detecting means;

said balance bar locking-detecting means including a peg means, a peg housing means, a sliding means slidably mounted on said support, and an indicating means;

one of said peg means and said peg housing means attached to said sliding means, the other attached to said balance bar;

said peg means slidably fitting in said peg housing means between a locked position, a balance position when said balance bar is in balance and at least one unbalanced position when said balance bar is unbalanced, and said sliding means sliding in said support between a first position when said peg is in said locked position, an intermediate position when said peg is in said unbalanced position, and a second position when said peg is in said balanced position;



activating means, said activating means sliding said sliding means from said first position to said intermediate position and said second position;

said indicating means indicating when said sliding means is in said second position.

4,218,836

SPEECH THERAPY

Penelope A. Acres, 53 Dorothy Rd., Norwood, Johannesburg, Transvaal Province, South Africa

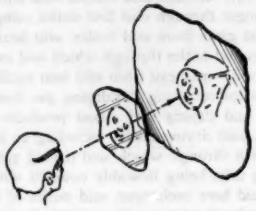
Continuation of Ser. No. 828,779, Aug. 29, 1977, abandoned.

This application Feb. 28, 1979, Ser. No. 15,913

Claims priority, application South Africa, Aug. 27, 1976, 76/5171

Int. Cl.[3] G09B *19/04*

U.S. Cl. 35—35 R **2 Claims**



1. A teaching aid for use in speech therapy for a student, said teaching aid comprising:

a mirror; and

at least one two dimensional full frontal outline of a human face, the outline including a representation of vocal apparatus corresponding to the configuration of the vocal apparatus of a person when a particular phonetic sound is being made, said representation including an open mouth and at least the soft palate used in making the designated sound;

a phonetic alphabetical representation or symbol of the particular phonetic sound associated with the outline; and

a transparent background on which are disposed the outline and the representation or symbol, said background being removably secured in front of said mirror so that the student can make the particular phonetic sound and compare the configuration of his vocal apparatus, which is

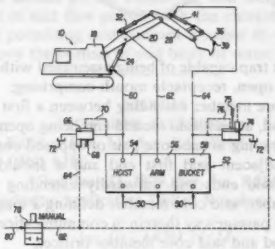
reflected from the mirror, with that on the transparent background.

4,218,837

HIGH LIFT HYDRAULIC SYSTEM FOR AN EXCAVATOR

Robert J. Peterman, Radnor, Pa., assignor to Koehring Company, Brookfield, Wis.

Filed Aug. 21, 1978, Ser. No. 934,720
Int. Cl.³ E02F *3/32*
U.S. Cl. 37—103 **8 Claims**



1. An apparatus for temporarily increasing the lifting capacity of an hydraulic excavator having a main lift boom pivotably about a horizontal pivot axis, a bucket arm pivoted about an axis at an outer end portion of the main lift boom and a bucket pivotably mounted at an outer end portion of the bucket arm, said apparatus comprising:

a first hydraulic circuit including:

an hydraulic hoist cylinder connected to the main lift boom and;

a manually operated hoist control valve for controlling flow of a pressurized fluid to said hoist cylinder;

a second hydraulic circuit including:

a hydraulic bucket cylinder connected between the bucket arm and the bucket for pivoting the bucket with respect to the arm; and,

a manually operated bucket control valve for controlling flow of the pressurized fluid to said bucket cylinder;

a dual position hoist relief valve connected to said first hydraulic circuit and normally biased to open when fluid pressure applied to said hoist ram exceeds a first preset pressure to thereby prevent pressure applied to said hoist cylinder from exceeding the first preset pressure;

a dual position bucket relief valve connected to said second hydraulic circuit and normally biased to open when fluid pressure applied to said bucket cylinder exceeds a maximum operating pressure to thereby prevent pressure in said bucket cylinder from exceeding the maximum operating pressure; and

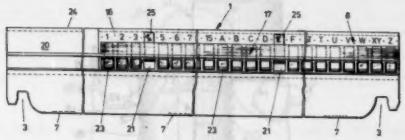
a manually operated pilot valve means for selectively opening said bucket relief valve to prevent the bucket from pivoting and, conjointly biasing said hoist relief valve to remain closed until fluid pressure applied to said hoist cylinder exceeds a second preset pressure, greater than the first preset pressure.

4,218,838

IDENTIFICATION CARRIER

Herbert Zippel, Altdorf, Fed. Rep. of Germany, assignor to Herbert Zippel GmbH & Co. KG, Nurnberg, Fed. Rep. of Germany

Filed Mar. 7, 1978, Ser. No. 884,364
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1977, 2717318
Int. Cl.³ B42F *21/00*
U.S. Cl. 40—359 **14 Claims**



1. A carrier adapted to be mounted to a register means for holding an identification strip, said carrier comprising:

a common wall;

means for mounting said common wall to an edge of said register means;

a first wall affixed to said common wall to define a first pocket between said first and common walls;

an identification strip located within said first pocket;

a second wall affixed to said common wall to define a second pocket between said second and common walls; and

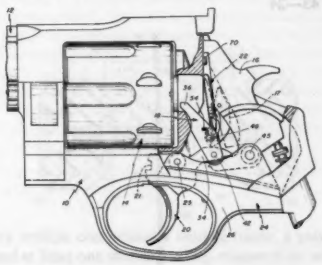
a plurality of signal means each of which is at least partially disposed within said second pocket, each of said signal means being selectively movable to be brought adjacent to and away from a respective portion of said identification strip.

4,218,839

FIREARM

Paul E. Brouthers, Monson, Mass., assignor to DWA Associates Inc., Monson, Mass.

Filed Jul. 31, 1978, Ser. No. 929,570
Int. Cl.³ F41C *1/00, 19/00*
U.S. Cl. 42—65 **14 Claims**



1. A firearm comprising;

a frame,

a cylinder and associated actuator for the cylinder supported in the frame,

said frame defining a chamber rearwardly of the cylinder,

a trigger mounted in the frame,

a hammer also mounted in the frame,

a hand disposed in the chamber,

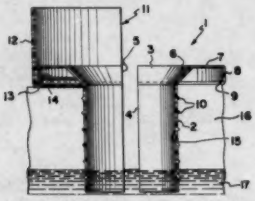
means pivotally supporting the lower end of the hand from the trigger with the upper end of the hand for operating the cylinder actuator,

a transfer bar disposed in the chamber,

and means pivotally supporting the lower end of the transfer bar from the hand with the upper end of the transfer bar

cooperating with the hammer when the trigger is pulled to fire the firearm.

4,218,840
ICE FISHING LINER
Robert J. Cohee, 13562 Horrell Rd., Fenton, Mich. 48430
Filed Dec. 20, 1978, Ser. No. 971,336
Int. Cl.[2] A01K *97/01*
U.S. Cl. 43—4 9 Claims

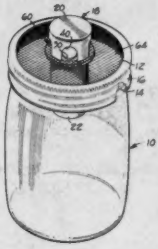


1. A liner adapted for insertion in an opening in ice, said liner comprising a hollow, generally cylindrical body having a peripheral flange joined to one end thereof, said flange terminating at its periphery in a skirt spaced from said body and extending in a direction toward but terminating well short of the opposite end of said body, said skirt terminating at its free edge in a rolled rim, said body having an axial slot extending the full length of said body, and said flange and said skirt each having a slot therein communicating with one another and with the slot in said body, said body, said flange, and said skirt being formed of material sufficiently resilient to enable radial flexure of said body, said flange, and skirt and vary the width of said slots.

4,218,841
ONE PIECE FISHING ROD BLANK FEATURING MOLDED IN EYELETS
Michael A. Gallagher, c/o George Spector 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007
Filed Aug. 18, 1978, Ser. No. 934,841
Int. Cl.[2] A01K *87/04*
U.S. Cl. 43—24 2 Claims

1. A one piece fishing rod, comprising in combination a tapering pole having a base end fitted in a handle, and a plurality of spaced apart fishing line eyelets located along a side of said pole and an end-eyelet at said tip, said pole and eyelets being molded from a single piece of plastic, each said eyelet including a longitudinally extending opening under a diagonal cross bar, providing opposing obtuse and acute angles.

4,218,842
INSECT TRAP ASSEMBLAGE
Ray A. Anderson, P.O. Box 5512, San Jose, Calif. 95110
Filed Oct. 5, 1978, Ser. No. 948,685
Int. Cl.[3] A01M *1/10*
U.S. Cl. 43—122 6 Claims

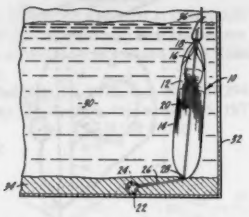


1. An insect trap capable of being assembled with a receptacle having an open, receptacle mouth comprising;
a tubular core member extending between a first end and a second end, at least said second end being open, said core member having at least one pair of opposed core member orifices adjacent said first end and a shoulder spaced between said ends and outwardly extending from said core member, said core member defining a longitudinally extending passageway therein in communication with said second end and said core member orifices;
a cap member with a skirt and an interior, longitudinally extending bore, said bore having a one end and an other end, at least said one end being open, said cap member having at least one pair of opposed cap member orifices in communication with said bore, said first end of said core member adapted to be slightly received through said one end of said bore into an assemblage position with said shoulder of said core member proximate said skirt of said cap member and with said passageway of said core member extending a predetermined distance beyond said bore one end;
a wall closing at least one of said first end of said core member and said other end of said bore;
detent means for holding said first end of said core member in said assemblage position and for aligning said at least one pair of said cap member orifices with said at least one pair of said core member orifices; and,
a screen member with a periphery adapted to be conformed and secured to the open, receptacle mouth, said screen member having a hole adapted to be fitted about said core member with said screen member sandwiched between said shoulder of said core member and said skirt of said cap member, with said cap member extended above said open, receptacle mouth and with said passageway of said core member extended into the receptacle, when said first end of said core member is in said assemblage position.

4,218,843
CONTAINER FOR RELEASING DRY CHEMICAL IN A BODY OF WATER
John L. Clarke, Jr., Riverside, Ill., assignor to Clarke Outdoor Spraying Company, Inc., Roselle, Ill.
Filed Nov. 13, 1978, Ser. No. 959,582
Int. Cl.[3] A01M *1/20*
U.S. Cl. 43—131 1 Claim

1. A device for releasing mosquito larvae-killing material

into a body of water including a sack formed of a porous material, said sack being closed at one end and at an intermediate location to define a pocket for said material, a buoyant member positioned adjacent said closed sack end, a second pocket spaced from said first named pocket and adjacent the opposite end of said sack, a weight in said second pocket, the



closure of said sack at said intermediate location forming a flexible hinge-like connection between said first and second pockets whereby the pocket for said material may bend relative to the second pocket containing said weight permitting movement of said first pocket with the current in a body of water and permitting said buoyant member to raise said first pocket above the bottom of said body of water.

4,218,844

MODEL FIGURES

Robin K. Knibbs, 143, London Rd., Brighton, East Sussex, England (BN1 4JH)

Filed Jan. 23, 1979, Ser. No. 5,834

Claims priority, application United Kingdom, Jan. 26, 1978, 31204/78

Int. Cl.[2] A63H *11/14*

U.S. Cl. 46—149 **8 Claims**

1. A model figure of an animal comprising a first member having a visual resemblance to the fore limbs and a part of the head including the upper jaw of the animal, and a second member pivotally connected to the first member and having a visual resemblance to at least one hind limb, the body and a part of the head including the lower jaw of the animal, wherein the pivotal connection between said first and second members is at substantially the junction between the upper and lower jaws of the animal.

4,218,845

BIRD-CALLING DEVICE

James T. Evans, 1013 Glynn Oaks Dr., Arlington, Tex. 76010, and Robert L. Allen, Arlington, Tex., assignors to James T. Evans, Arlington, Tex., by Robert L. Allen

Filed May 30, 1979, Ser. No. 44,157

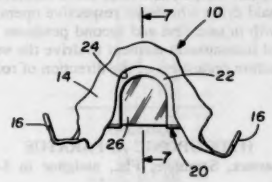
Int. Cl.[3] A63H *5/00*

U.S. Cl. 46—180 **13 Claims**

1. A bird-calling device adapted to fit within a user's mouth, comprising:

(a) a rigid base adapted to fit snugly in the roof of a user's mouth and having means adapting it to be securely anchored to at least one upper tooth, and the base having a generally U-shaped configuration with the open portion of the U being toward the front of the user's mouth when the base is fitted therein, and the closed portion of the U being configured on its top to produce an essentially air-tight seal with the roof of the user's mouth, and the base open position forming a central recess of a given size, said recess having attachment means associated with its walls; and

(b) a removable diaphragm assembly which cooperates with said attachment means to be secured thereby, with its leading edge being spaced inwardly from the user's front



teeth when the base is fitted in the user's mouth, said diaphragm being sized to provide an air-tight fit within the central recess of the rigid base, and the diaphragm being exposed to selective contact by the user's tongue, whereby an imitation bird sound may be produced by expelling air past the diaphragm, and whereby the user may alter the sound by selectively varying the contact between the diaphragm and his tongue.

4,218,846

LANE CHANGING TOY CAR WITH UNIDIRECTIONAL CLUTCH AND POSITIVE STEERING

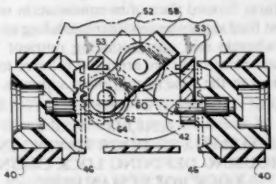
Robert G. Lahr, Reseda, Calif., assignor to Ideal Toy Corporation, Hollis, N.Y.

Continuation-in-part of Ser. No. 857,056, Dec. 5, 1977, Pat. No. 4,156,987, and Ser. No. 807,997, Jun. 20, 1977, Pat. No. 4,125,261, which is a continuation-in-part of Ser. No. 783,722, Apr. 1, 1977, Pat. No. 4,078,799, which is a division of Ser. No. 747,441, Dec. 6, 1976, abandoned. This application Sep. 20, 1978, Ser. No. 944,042

The portion of the term of this patent subsequent to Nov. 14, 1995, has been disclaimed.

Int. Cl.[3] A63H *30/02*; A63F *9/14*

U.S. Cl. 46—262 **8 Claims**



1. A toy vehicle comprising a vehicle frame, a pair of drive wheels and at least one steering wheel mounted on said frame, said steering wheel being mounted for pivotal steering movement thereon; a reversible rotary drive motor mounted in said frame and having a rotary output; steering means operatively engaged with said rotary output of the motor for steering said drive wheel to the right or left depending upon the direction of rotation of said output including a steering arm operatively connected to said steering wheel to pivot the steering wheel in the right or left direction and steering transmission means operatively connected between said rotary output and said steering arm for converting rotation of said rotary output into left or right hand swinging movement of the arm in response to a change in the direction of rotation of said output; and drive transmission means in said frame drivingly engaged with said rotary output for driving said drive wheels in a forward direc-

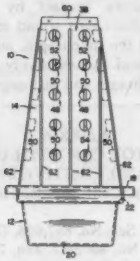
tion regardless of the direction of rotation of said rotary output; said drive transmission means including at least one transmission element movably mounted in said frame for movement between first and second positions in response to the direction of rotation of the drive motor; said movably mounted transmission element including a gear support frame rotatably mounted for pivotal movement on an axis generally in alignment with the axis of rotation of said output and having at least one idler drive member rotatably mounted thereon and operatively engaged with said output, said idler drive member being associated with said drive wheels for respective operative engagement therewith in said first and second positions of the movably mounted transmission element to drive the vehicle in the forward direction regardless of the direction of rotation of the drive motor.

4,218,847

HYDROPONIC APPARATUS

Frank W. Leroux, Seminole, Fla., assignor to I-OAG, Inc., Largo, Fla.

Filed Oct. 25, 1978, Ser. No. 954,413
Int. Cl.³ A01G *31/02*
U.S. Cl. 47—59 **8 Claims**



1. A hydroponic apparatus comprising a support means having a plurality of mutually supporting diagonally disposed plant trays supported thereon and a nutrient feed supply disposed within said plurality of plant trays, each said plant tray includes a plurality of plant supports having nutrient feed apertures formed therein such that each plant is fed directly from said nutrient feed supply, said nutrient feed supply comprises a pump disposed within said plurality of plant trays and a nutrient feed supply manifold having a plurality of nutrient supply apertures formed thereof in combination with a plurality of nutrient feed supply panels corresponding to each of said plant trays wherein said corresponding nutrient feed supply panels and said plant trays are arranged relative to each other to feed nutrient to the base of said plant supports.

4,218,848

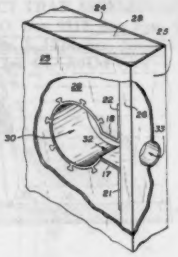
PLASTIC FOAM-FILLED DOOR HAVING INTEGRAL PLASTIC HOUSING DEFINING LOCK CYLINDER AND LOCK BOLT CHAMBERS

David M. Nelson, Kewanee, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Feb. 28, 1979, Ser. No. 15,977
Int. Cl.² E06B *3/00*
U.S. Cl. 49—503 **10 Claims**

1. A door comprising frame means including a swinging edge stile having a lock bolt opening therein, a pair of space-apart metal sheets having axially aligned lockset door openings therein and forming the outer surfaces of said door, and a core of a rigid foamed plastic material disposed intermediate said metal sheets,

a lock housing insert formed of a rigid plastic material having a thin wall substantially perpendicular to said spaced-apart metal sheets and having its edges in contact engagement with said spaced-apart metal sheets, said lock housing insert comprising a lock cylinder housing member cooperating with said metal sheets to define a lock cylinder chamber, and a lock bolt housing member cooperating with said metal sheets to define a lock bolt chamber, said lock bolt housing member terminating in a pair of legs extending outwardly and oppositely to each other, said legs being coplanar and being affixed to said stile, said lock



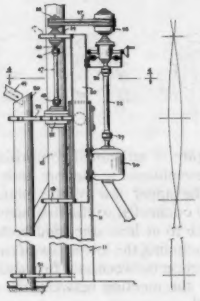
cylinder chamber and said lock bolt chamber being substantially free of said foamed plastic material, said door being adapted to have a lockset assembly mounted within said lock housing insert having a lock cylinder member disposed within said lock cylinder chamber and a lock bolt member disposed within said lock bolt chamber.

4,218,849

SONIC METHOD AND APPARATUS FOR ACTIVATING A FLUID IN TREATING MATERIAL OR POLISHING PARTS EMPLOYING COUPLING RESONATOR MEMBER

Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif. 91406

Filed Oct. 23, 1978, Ser. No. 953,681
Int. Cl.² B24B *31/02, 1/00*
U.S. Cl. 51—7 **16 Claims**



1. Apparatus for sonically activating a fluid in the treatment of material with vibration comprising:

elongated resonator means fabricated of an elastic material,

means for sonically vibrating said resonator means in a gyratory manner at a frequency such as to effect resonant standing wave vibration thereof at a sonic frequency,

container means for receiving said fluid and said material, and

means for coupling sonic energy from said resonator means to said container means at a point corresponding to at least one anti-node of the standing wave vibration pattern formed along said resonator means to effect gyratory vibration of the container means.

8. A method for sonically activating a fluid in the vibratory treatment of material comprising the steps of:

resonantly vibrating an elongated elastic member at a sonic frequency so as to set up standing wave gyratory vibration therein,

coupling sonic energy from said elastic member to a conduit at at least one position along said elastic member corresponding to an anti-node of the standing wave pattern to effect gyratory vibration of the conduit, and

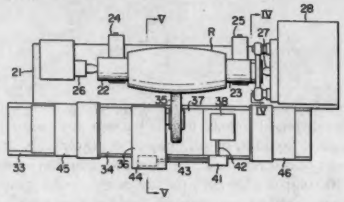
passing said fluid and said material along said conduit.

4,218,850

CAMBERING DEVICES OF ROLL GRINDING LATHES

Yasuo Sakai; Kazuo Nagashima, and Harukatsu Goto, all of Numazu, Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 21, 1978, Ser. No. 944,294
Claims priority, application Japan, Sep. 26, 1977, 52-115401
Int. Cl.³ B24B 17/02
U.S. Cl. 51—49 **6 Claims**



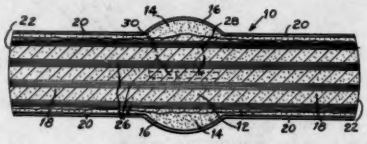
1. In a cambering device of a roll grinding lathe of the type comprising means for driving a grinding wheel in the longitudinal direction of said roll, a cambering cam for swinging said grinding wheel toward and away from the center of said roll and means for rotating said cam in accordance with a position of said grinding wheel in the longitudinal direction thereby forming a cambered profile on the surface of said roll, the improvement which comprises means to detect a predetermined position along the longitudinal axis of said roll to which said grinding wheel has been moved during longitudinal movement, and means responsive to the output of said position detecting means for varying the rotational speed of said cam.

4,218,851

HIGH SPEED ROTATABLE ABRASIVE BODY AND MOUNTING

Charles V. Rue, Petersham, Mass., assignor to Norton Company, Worcester, Mass.

Filed Mar. 9, 1979, Ser. No. 19,268
Int. Cl.³ B24D 17/00
U.S. Cl. 51—168 **12 Claims**



1. A high speed rotatable holeless resin bonded abrasive body comprising:

a central mounting portion including

diametrically opposite arcuate segments and outer arcuate surfaces adapted for aligned compressive clamping, driving and supporting engagement by suitable spindle mounting means adapted for rotating the abrasive body about an axis; and

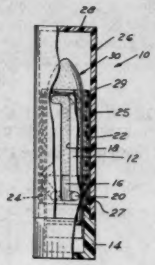
diametrically opposite grinding portions of predetermined width extending radially outward from the central mounting portion to diametrically opposite arcuate peripheral grinding surfaces.

4,218,852

DIAMOND LAPPING COMPOUND STICK AND HOLDER

Frank Rademacher, 4112 Shoreland Dr., Vero Beach, Fla. 32960

Filed Oct. 2, 1978, Ser. No. 947,593
Int. Cl.³ B24D 17/00
U.S. Cl. 51—211 R **2 Claims**



1. A cosmetic-type stick diamond lapping compound and holder, comprising:

a. a hollow, essentially cylindrical, inner sleeve member having an opening at one end and a knob at the other end, said inner sleeve member includes a pair of diametrically opposed longitudinally extending slots;

b. a receptacle disposed within said cylindrical inner sleeve member, said receptacle consists of a pair of projections diametrically opposed on the outer surface thereof and interconnecting said diametically opposed slots of said inner sleeve member;

c. an outer sleeve member encompassing said inner sleeve member, said outer sleeve member includes a longitudinally extending diagonal slot;

d. a cylinder member encompassing said inner sleeve member and said outer sleeve member whereby said receptacle is adapted for longitudinal movement therein; and

e. 5 gram stick of diamond lapping compound encased in said receptacle, said stick of diamond lapping compound comprises:

1. 7.6% by weight of petroleum jelly, 43.9% by weight of paraffin, 45.8% by weight of mineral oil, and 2.7% by weight of carnauba wax; and

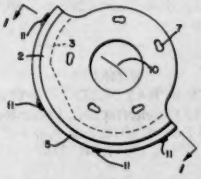
2. 0.25 carats of diamond micron powder.

4,218,853

ENERGY ABSORBING KEYHOLE SLOTS

Robert A. Willoughby; John P. Law, and Renno W. Budziak, all of Athens, Pa., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Nov. 29, 1978, Ser. No. 964,677
Int. Cl.² B24B 55/04
U.S. Cl. 51—269 **7 Claims**



1. An impact energy absorbing mounting for a bolted on guard device comprising:

means defining an elongated bolt hole in the mounting por-

tion of said device for receiving a mounting bolt which secures the guard device in position;

said elongated bolt hole having a maximum minor dimension approximately equal to the diameter of said mounting bolt and a major dimension greater than the minor dimension; and

said minor dimension being decreased in the direction opposite of movement of said device upon impact so that said minor dimension is progressively deformed as an energy absorbing means by said mounting bolt in response to an impact on said guard device.

4,218,854

APPARATUS FOR TRANSPORT AND SIMULTANEOUS SURFACE-TREATMENT OF DISCRETE COMMODITIES

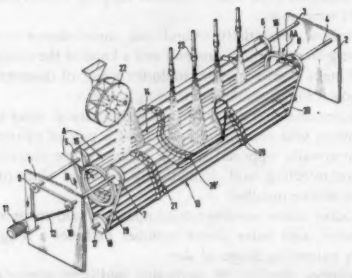
Werner Hunziker, Staffelbachstrasse 195, Kirchleerau, Switzerland (CH-5054)

Filed Jul. 1, 1977, Ser. No. 812,313

Claims priority, application Switzerland, Jul. 20, 1976, 9261/76

Int. Cl.[2] **B24C** *3/14*

U.S. Cl. 51—423 **3 Claims**



1. Apparatus for continuously transporting and changing the orientation of metallic objects or other discrete commodities, comprising substantially parallel first and second direction changing means; an endless band-like conveyor trained over said direction changing means and assuming a trough-shaped configuration therebetween, said conveyor including two flexible end portions, a plurality of rails extending in parallel between and connected to said end portions, a plurality of cams each having a protuberance, a plurality of distancing members, and means for so mounting a predetermined number of said cams and an associated number of said distancing members on each of said rails that said protuberances extend outwardly of said conveyor and that said distancing members maintain said cams at distance from each other along the respective rail, said mounting means including complementarily configurated projections and grooves on said rails, on the one hand, and on said cams and distancing members, on the other hand, said projections being received in said grooves upon assembly; a feeding station at one of said end portions of said conveyor for admission of discrete commodities thereto; and means for driving said conveyor for the commodities to be acted upon by said protuberances and moved toward the other end portion of said conveyor.

4,218,855

PARTICULATE SPRAY NOZZLE WITH DIFFUSER

Otto Wemmer, 3710 Greenbriar Dr., Columbia, S.C. 29206

Filed Dec. 8, 1978, Ser. No. 967,750

Int. Cl.[3] **B24C** *5/04*

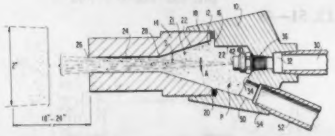
U.S. Cl. 51—439 **32 Claims**

1. A particulate discharging apparatus comprising:

housing means defining a mixing chamber with an upstream side and a downstream side, said housing means including an elongated discharge bore having an entrance at one end communicating with the downstream side of said chamber and the other end open externally to said housing means;

pressure nozzle means having a liquid passage extending therethrough between an inlet for delivering a liquid under pressure into said passage and an outlet orifice for discharging pressurized liquid from said passage into said mixing chamber, said orifice communicating with the upstream side of said chamber in spaced relation to said discharge bore;

diffuser means disposed in said nozzle passage, said orifice in the absence of said diffuser being adapted to discharge said pressurized liquid as a substantially solid stream without significant divergence and cooperating with said diffuser as disposed in said nozzle passage for causing said pressurized liquid to be discharged as a gradually diverging spray of discrete liquid droplets, said orifice cooperating with said discharge bore for causing said gradually diverging spray to pass through said discharge bore so as to produce a vacuum in said chamber; and,



inlet means communicating with said chamber for delivering a stream of particulate material into said chamber in response to said vacuum, said chamber cooperating with said orifice for causing said spray to intermix with said particulate material and propel the resultant mixture through said discharge bore.

4,218,856

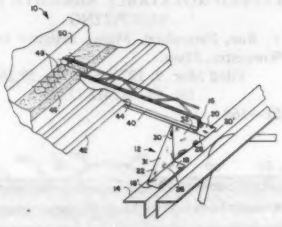
CONNECTOR FOR SLOPED ROOF DECK

John W. Irwin, P.O. Box 4753, Clearwater, Fla. 33518

Filed Sep. 25, 1978, Ser. No. 945,090

Int. Cl.[2] **E04B** *7/04;* **F16B** *9/00*

U.S. Cl. 52—90 **6 Claims**



1. An improved connector for use between a joint and a truss, comprising in combination:

a base plate for mounting to the joist;

a support plate for mounting to the truss;

coupling means in the form of a half box support column made by the process of providing a parallelogram shaped and folding into first and second identical triangular portions joined into perpendicular planar relationship along a bend line intersecting two opposed corners;

said plates connected to similar bases of the first and second triangular portions with said bend line extending perpendicular to both of the bases to which the plates are attached; and

said base and support plates lying in parallel superimposed relationship; and

whereby the connector may be seated on a joist and the truss

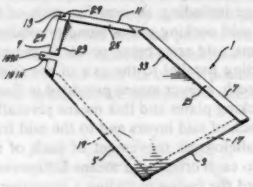
seated on the connector with the weight supported in compression through said coupling means.

4,218,857

METAL SHINGLE ROOF MODERN DESIGN

Louis L. Vallee, 6392 Maubourg Ave., Montreal, Quebec, Canada (H1M 2C8)

Filed Mar. 17, 1978, Ser. No. 887,613
Claims priority, application Canada, Dec. 14, 1977, 293053
Int. Cl.[2] E04D *1/00*; E04B *7/00*
U.S. Cl. 52—94 **10 Claims**



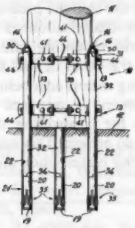
1. A sheet material starter shingle for use in shingling a roof; the starter shingle having a first straight side with an underturned lip for engaging the eave edge of a roof, second and third straight sides extending perpendicularly from the first side with an underturned lip on the second side and an overturned lip on the third side for engaging with adjacent starter shingles; fourth and fifth straight sides extending inwardly at an angle of 45° to the second and third sides respectively and meeting to define a peak opposite the first side, the fourth and fifth sides each having an overturned lip for engaging with roofing shingles; the third side of the shingle being slightly shorter than the second side with the inner edge of the overturned lip on the third side located so that if the edge were extended to intersect the fifth side, it would do so at a distance from the first side, equal to the distance the corner between the second and fourth sides is located from the first side.

4,218,858

TRI-ANCHOR BRACKET FOR POLES

Steve Legler, Montreal, Canada, assignor to Tri-Steel Fabricators Ltd., Montreal, Canada

Continuation of Ser. No. 814,138, Jul. 8, 1977, abandoned. This application Dec. 13, 1978, Ser. No. 968,737
Int. Cl.[2] E02D *5/74*; E04C *3/30*
U.S. Cl. 52—165 **8 Claims**



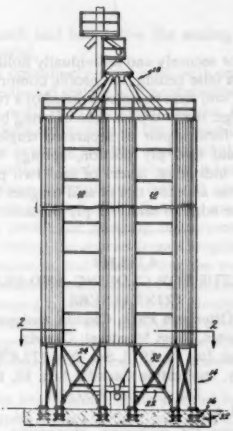
1. An anchor bracket securing a pole vertically on a hard rock-like support surface, said bracket comprising a clamp device secured to said pole, at least two anchor rods, each said anchor rod having a top end and a bottom end section, said bottom end section having an expanding end, a bottom securement sleeve about said bottom end section of each anchor rod and having at least an expandable section formed in a bottom end portion thereof, a top securement sleeve about each anchor rod above said bottom securement sleeve, said clamp device being fixedly secured to said top securement sleeve, a hole in said support surface receiving a respective one of said anchor rods and its associated bottom and top securement sleeves with said top securement sleeve extending out of said hole above said support surface, gripping means displaceably engaged with said rod top end section remote from said rod bottom end section and engageable with said top securement sleeve to cause axial displacement of said rod relative to said top securement sleeve and said clamp device, said top securement sleeve having a bottom end in abutment with a top end of said bottom securement sleeve permitting relative axial displacement between said expanding end of said anchor rod and said expandable section of said bottom securement sleeve when said rod is axially displaced by said gripping means whereby said expandable section is displaced outwardly by lateral pressure of said expandable section to anchor said bottom end section in its respective hole in said support surface, the fixed relation between said top securement sleeve, said clamp device and said post on the one hand and the relative movability of said rod and said bottom securement sleeve on the other hand permitting said rod when subjected to an axial pulling force caused by a transverse load applied to said pole to cause said rod expanding end to apply further lateral pressure to said expandable section of said bottom securement sleeve to increase said lateral pressure of said expandable section in the respective hole while said top securement sleeve is subjected to substantially no pulling force, and said top securement sleeve being retrained against lateral movement in a respective hole and restraining said post against lateral movement on said support surface.

4,218,859

WORKING BIN

Michael L. Sams, 1050 N. Grape St., Escondido, Calif. 92026

Filed May 22, 1978, Ser. No. 908,281
Int. Cl.[2] E04H *7/24*
U.S. Cl. 52—194 **24 Claims**



1. A working bin in the form of a hollow prism whose cross section in a horizontal plane conforms generally to a hexagon, comprising:

six vertical walls of flat sheet metal, adjacent pairs of which converge laterally toward a corner of the hexagon but terminate at vertical edges short of the corner;

six connectors of identical shape, each formed of flat sheet metal and associated with a different adjacent pair of said six vertical walls;

each connector having a central panel extending between the edges of its associated pair of adjacent walls, said central panel flanked by planar side panels lying flush

against and attached to those surfaces of the pair of adjacent walls which face toward the interior of the hexagon;

six pillars for supporting the hollow prism at the corners of the hexagon, each pillar including

a ground anchor extending into a foundation;

a column connected at its lower end to said ground anchor and having a central axis passing vertically through a corner of the hexagon;

a cap connected to said column at its top, having six vertical faces forming a hexagonal prism, said faces oriented perpendicular to the directions of the adjacent vertical walls which are joined at said corner,

each of said connectors resting on top of one of said caps and attached to it,

said working bin further comprising six struts, each extending horizontally and connecting opposing vertical faces of the caps on adjacent columns around the periphery of the working bin and supporting said vertical walls, each of said vertical walls terminating in a lower edge which rests on and is attached to one of said six struts.

4,218,860

PROFILE FOR HOLDING PANELS

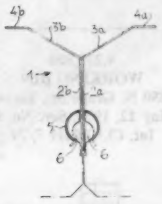
Moshe Av-Zuk, P.O. Box 28075, Tel-Aviv, Israel

Filed Aug. 9, 1978, Ser. No. 932,407

Claims priority, application Israel, Aug. 9, 1977, 52693

Int. Cl.[2] E04B *5/52*

U.S. Cl. 52—484 **3 Claims**



1. A profile for securely and individually holding suspended panels forming a false ceiling, the profile comprising a strip of material, part of said strip being composed of a two ply portion having a free edge, the two plies thereof being bent apart from one another to form a pair of separated single ply portions connected to said two ply portion, springy tongues being punched out of individual layers of said two ply portion, at distances from one another, tips of said tongues being directed towards said free edge of said two ply portion.

4,218,861

APPARATUS FOR CLOSING AND SEALING CONTAINERS

Horst F. Marz, Otterburn Park, Canada, assignor to Canadian Industries Limited, West Montreal, Canada

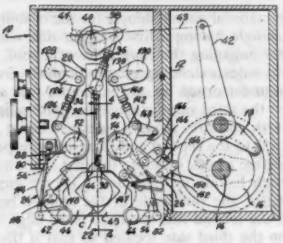
Filed Jul. 26, 1978, Ser. No. 927,979

Claims priority, application Canada, Aug. 10, 1977, 284654

Int. Cl.[3] B65B *51/08*

U.S. Cl. 53—138 A **4 Claims**

1. An apparatus for gathering, elongating, clipping and cutting stuffed flexible casings, including four necking plates which comprise two cooperating pairs of plates with each pair comprising a notched jaw portion mounted on each side of a casing path and adapted for opposed reciprocal movement relative the other jaw portion of the pair for engaging and gathering the said flexible casing in said plate and for necking the said casing, the said necking plates being mounted by a parallelogram linkage suspended from an overhead frame, means for simultaneously moving said necking plate pairs by means of said parallelogram linkage towards the said casing to gather the said casing within the said jaws, means to move apart the said necking plate pairs in a direction parallel to the axis of the said casing path to elongate the said gathered casing, magazine means for advancing at least one clip overhead of said casing and a reciprocating plunger for removing a clip from said magazine and arranging it on the said elongated casing between the moved-apart necking plates, die means pivoted from the said overhead frame and adapted for movement to and from a location between the said moved-apart necking plates below and adjacent the said elongated casing for receiving and forming the said clip about the said casing, cutting means adapted for movement between the said moved-apart necking plates and for cutting the said elongated casing in the vicinity of said clip, the said notched jaw portion in each necking plate comprising an open V-shaped cut-out, said parallelogram linkage including an arm for each of said necking plates, each of said necking plates being pivotally mounted to each of said arms, said arms being pivotally mounted to a pair of shafts extending parallel to the axis of the said casing path but above said path, a lever means provided in fixed relation to each of said necking plates and link means pivotally connected at one end to each of said levers and to the said frame in order to provide parallelogram movement of each of said necking plates relative to each other, said means for moving said necking plates toward the casing including a cam-operated control



means linked to said mounting arms for moving the arms through reciprocating pivoting movement relative to said frame, the said shafts being journalled in said frame and being coupled for opposed rotational movement, said necking plate moving apart means including a slidable sleeve concentrically mounted on each shaft for each arm of one pair of necking plates and adapted for sliding, non-rotational movement relative to the shaft, each arm of said one pair of necking plates being mounted on each of said sleeves, means controlled by said cam operated means for sliding said arms of one pair and said respective necking plates such as to move them from the other pair of necking plates to operatively elongate the neck formed on the casing, the said die means being mounted on an arm, said arm being pivotally mounted to one of said parallel shafts, an opposed arm mounting said cutting means being pivotally mounted to the other of said shafts, each of said die support arm and cutting means arm being coupled for simultaneous pivoting movement in opposed directions and being linked to cam means for controlling the movement of said arms, said arms being so arranged on said shafts that they pass between the said necking plates when the said plates have been moved apart.

4,218,862

MACHINE FOR CLOSING THE UPPER FLAPS OF A PARALLELEPIPED BOX

Augusto Marchetti, Piazza Sicilia 7, Milan, Italy

Filed Jan. 24, 1979, Ser. No. 6,133

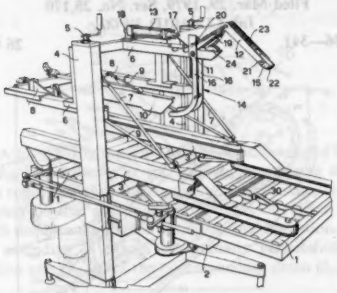
Claims priority, application Italy, Feb. 17, 1978, 20372 A/78; Feb. 22, 1978, 20510 A/78

Int. Cl.[3] B65B *7/20*

U.S. Cl. 53—374 **4 Claims**

1. A machine for closing the upper flaps of a parallelepiped box, comprising a support surface for the boxes, means for feeding the boxes along said support surface, and, disposed

above said support surface, a first closure member for momentarily engaging with the front end flap of the boxes to turn it over into its closed position, a second closure member for momentarily engaging with the rear end flap of the boxes to turn it over into its closed position, and a guide situated at a predetermined height above said support surface to engage with said overturned box flaps and retain them in their closed position after their disengagement from said closure members, wherein said first and second closure members are constituted by arms carried by respective front and rear ends of a rotatable support, which is rotatable on command from a first angular position for closing the front flap, to a second angular position for closing the rear flap, whereby in said first position said first closure member is inserted into the path of travel of the open end flaps of the boxes so that it is encountered by said front flap and is thus turned over into its closed position, said second closure member being outside said path, in said second position



said first closure member is outside said path and said second closure member is inserted into said path to engage the open rear flap of the boxes from behind, means being provided to respond to the displacement of said rotatable support from said first to said second angular position to cause said second closure member to rotate relative to said rotatable support, on termination of said displacement, until in a substantially horizontal position for turning said rear flap over into its closed position, wherein said rotatable support is substantially in the form of an inverted V, and said means for rotating said second closure member are constituted by a flexible connection means which straddles said rotatable support and acts between a fixed connection point and said second closure member, the length of said flexible means being chosen such as to enable it ot be put under tension by the yeildably opposed rotation of said second closure member only on termination of the movement of the rotatable support from said first to said second angular position.

4,218,863

CONTINUOUS MOTION WRAPPING MACHINE

Thomas B. Howard, Green Bay, Wis., and Christof Stary, Eckental, Fed. Rep. of Germany, assignors to American Can Company, Greenwich, Conn.

Filed Nov. 22, 1978, Ser. No. 962,949

Int. Cl.³ B65B 9/06, 9/10

U.S. Cl. 53—547 **25 Claims**

1. Apparatus for wrapping articles with heat sealable material, comprising:

(a) tube forming means for receiving a web of heat sealable material and forming the same into tubular form with the longitudinal edges of the material in overlapped relation;

(b) article feeding means adapted to receive articles to be wrapped and for feeding the same in longitudinal alignment and selected spaced relation into the tube of heat sealable material formed by said tube forming means;

(c) means for drawing the tubular formed material with the articles contained therein from said tube forming means;

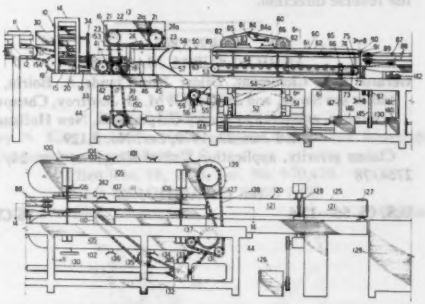
(d) a heat sealer positioned to heat seal the overlapped edges of the tubular formed material being drawn by said means for drawing comprising,

(1) an endless heat sealing belt having perforations therein distributed over the length of said belt,

(2) a belt carriage supporting said sealing belt for continuous motion with a portion of said sealing belt being linearly disposed and adapted for heat sealing contact with the overlapped edge portions of the tubular formed material,

(3) means for directing heated air at a first position on the linearly disposed portion of said sealing belt to heat the material under said belt above the sealing temperature of the material by the heated air passing through the perforations in said belt,

(4) means for directing cooling air at a second position on the linearly disposed portion of said sealing belt spaced in the direction of travel of said belt from said first position to cool the overlapped heat sealable material



underneath said belt below the sealing temperature of the material,

(5) means operatively associated with said belt carriage for driving said sealing belt in substantially synchronous contact with the overlapped tubular formed material during forward motion of the formed material;

(e) means for severing the heat sealed tubular formed material substantially midway between adjacent articles to thereby leave overwrapped material about each article having open ends extending from the article;

(f) indexing means for grasping the severed overwrapped articles, rotating the articles from a longitudinal to a transverse orientation, and transporting the overwrapped article longitudinally with the open severed ends of the wrapping extending transversely to the direction of travel;

(g) means for tucking and folding the severed ends of the overwrapped material about each article as it is transported by said indexing means in a transverse orientation; and

(h) means for heat sealing the tucked and folded ends of the overwrapped material about each article.

4,218,864

DRIVE REVERSING MECHANISM

Jozef R. G. Allemeersch, Jabbeke, and Thierry E. G. Devriese, Brugge, both of Belgium, assignors to Sperry Corporation, New Holland, Pa.

Filed Jul. 2, 1979, Ser. No. 54,196

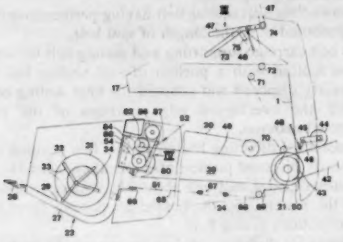
Claims priority, application United Kingdom, Jul. 3, 1978, 28590/78

Int. Cl.³ A01D 69/00

U.S. Cl. 56—11.2 **5 Claims**

1. A harvesting machine comprising drive means for driving certain components thereof, drive control means for engaging

and disengaging the drive means, drive reversing means operatively associated with the drive means, control means for controlling the drive reversing means and being actuable in unison with the drive control means, and means for actuating



of the drive control means and the reversing control means in unison in order that the drive reversing means is actuated and subsequently the drive means is engaged so as to be driven in the reverse direction.

4,218,865

AGRICULTURAL MACHINES

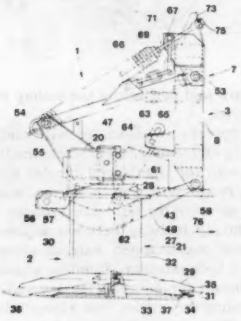
Gerard P. L. Chaumont, Dijon; Jean-Claude A. Boirin, Pontailler sur Saone, and Jacques J. M. G. Jouffroy, Chenove, all of France, assignors to Sperry Corporation, New Holland, Pa.

Filed Jan. 22, 1979, Ser. No. 5,129

Claims priority, application United Kingdom, Jan. 24, 1978, 2754/78

Int. Cl.[3] **A01D** *35/26*

U.S. Cl. 56—13.6 **16 Claims**



1. An agricultural machine comprising:

a mounting beam movable in operation at a predetermined, relatively invariable average height above the ground surface, said mounting beam being transversely disposed to a forward direction of travel during operation of said agricultural machine, said mounting beam having an inboard end and a spaced apart outboard end;

a main beam suspended from said mounting beam for movement independently thereof;

crop harvesting means operably depending downwardly from said main beam, said crop harvesting means having a lower ground engaging surface;

first and second spaced apart linkage means interconnecting said mounting beam and said main beam for suspending said main beam from said mounting beam, both said first and said second linkage means including universal joints connecting the respective said linkage means to both said mounting beam and said main beam such that said main beam is movable relative to and independently of said mounting beam;

a third linkage means spaced from both said first and said second linkage means to interconnect said mounting beam and said main beam for stabilizing said main beam against shifting in a transverse direction relative to said mounting beam and minimizing any turning moment encountered during a change in direction of travel which would tend to tip said agricultural machine about a portion of said ground engaging surface, said third linkage means including a universal joint for connection to said main beam, said universal joint on said third linkage means being positioned below said main beam, said third linkage means being connected to said mounting beam by a substantially horizontal pivot disposed transverse to the direction of travel; and

drive means for driving said crop harvesting means.

4,218,866

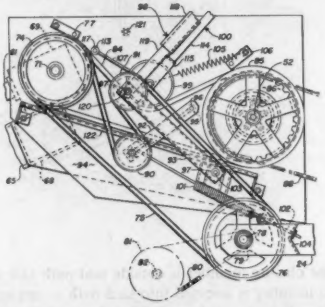
AUTOMATIC BALE EJECTION DRIVE

Charles A. Parrish, New Holland, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.

Filed Mar. 29, 1979, Ser. No. 25,170

Int. Cl.[2] **A01D** *39/00*

U.S. Cl. 56—341 **26 Claims**



1. A drive system having a frame supporting the working element, a rotary powered drive source, and a reversible rotatably driven working element which comprises:

(a) a rotary driving shaft connected to the drive source and rotatably mounted to the frame;

(b) a first driven shaft rotatably mounted to the frame;

(c) a second driven reversible shaft rotatably mounted to the frame;

(d) a first rotary drive transfer means interconnecting the driving shaft and the first driven shaft;

(e) a second rotary drive transfer means interconnecting the driving shaft and the second driven reversible shaft to selectively drive the working element and the second driven reversible shaft in a first direction and an opposing second direction;

(f) a first rotatable tensioning means movably fastened to the frame for cooperatively interacting with the second rotary drive transfer means so that sufficient tension is selectively maintainable on the second rotary drive transfer means to permit the rotary driving shaft to drive the second driven reversible shaft in the first direction;

(g) second rotatable tensioning means pivotally fastened to the frame and for cooperatively interacting with the first rotary drive transfer means so that sufficient tension is maintained thereon to permit the rotary driving shaft to drive the first driven shaft; and

(h) lifting means fastened to the frame and connected to the first rotatable tensioning means and the second rotatable tensioning means in such a manner that when actuated the lifting means moves the first rotatable tensioning and the second rotatable tensioning means so that the second rotary drive transfer means no longer transmits rotary power from the driving shaft to the second driven reversible shaft and the first rotary drive transfer means at a

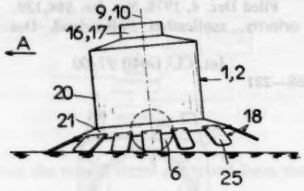
predetermined point in the movement of the second rotatable tensioning means causes rotary power to be transmitted to the second driven reversible shaft to drive the second driven reversible shaft and the working element in the opposing second direction.

4,218,867

HAYMAKING MACHINE

Pierre Kaetzel, Saverne, France, assignor to Samibem, S.A., Marmoutier, France

Filed Oct. 10, 1978, Ser. No. 950,260
Claims priority, application France, Oct. 7, 1977, 77 30788
Int. Cl.[2] A01D *77/00, 79/00*
U.S. Cl. 56—370 **2 Claims**



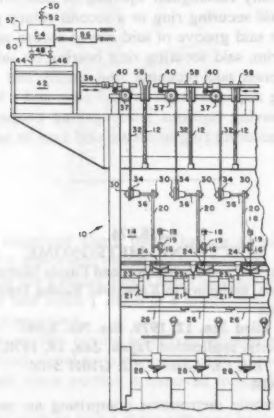
1. A haymaking machine for the windrowing of fodder, the turning of windrows or for tedding, comprising at least one drum rotating about a substantially vertical or inclined axis and carrying flexible and deformable plates of rubber or the like which displace the fodder during normal operation, said plates (19) extending in planes substantially perpendicular to the rotation axis (9, 10) of the corresponding drum (1, 2).

4,218,868

SLUBBED OPEN END SPUN YARN

Edgar H. Pittman, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Division of Ser. No. 889,719, Mar. 24, 1978, Pat. No. 4,144,702.
This application Aug. 24, 1978, Ser. No. 936,227
Int. Cl.[3] D02G *3/34*
U.S. Cl. 57—209 **4 Claims**



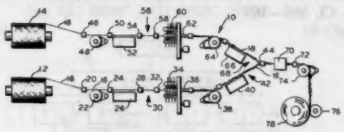
1. An open end spun yarn of staple fibers having portions of increased weight along the length thereof comprising: an elongated length of spun staple fibers having first spaced portions of higher weight than second portions of said open end spun yarn and third portions next adjacent to said first spaced portions having substantially the same weight as said second portion and having a higher twist than said first and said second portions.

4,218,869

SPUN-LIKE CONTINUOUS MULTIFILAMENT YARN

Richard C. Newton, Greenville, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 17, 1978, Ser. No. 934,669
Int. Cl.[2] D02G *1/20, 3/04*
U.S. Cl. 57—245 **17 Claims**



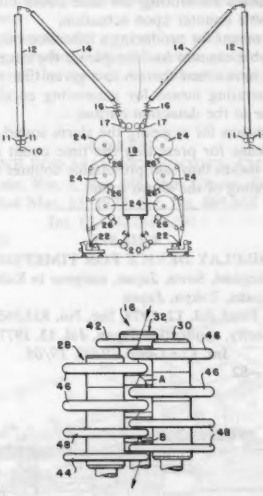
1. A process for producing a continuous multifilament yarn comprising combining and mutually interlacing a plurality of draw-textured yarn ends in an interlacing zone at different overfeed speeds so as to produce a composite continuous multifilament yarn of spun-like appearance and feel.

4,218,870

FALSE TWIST MACHINE

Jerry N. King, Reidville, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Dec. 18, 1978, Ser. No. 970,478
Int. Cl.[3] D01H *7/92;* D02G *1/08*
U.S. Cl. 57—284 **14 Claims**

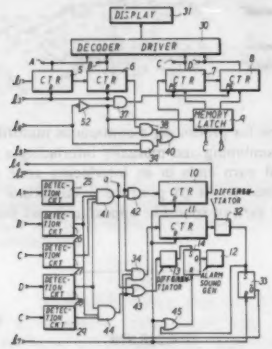


1. In a friction false twist yarn producing machine having a primary heater, a cooling zone, a secondary heater and a means to take up treated yarn, the improvement comprising a friction false twist device located between said primary and said secondary heaters, said friction false twist device including at least one stack of rotatably mounted substantially circular discs, said stack of substantially circular discs having at least one disc in said stack on the inlet side thereof of greater thickness than the discs on the outlet side of said stack, means to rotate said stack of discs and means to cause yarn to engage the peripheral edges of said discs to insert a false twist in the yarn.

4,218,871
ELECTRONIC TIMER

Nakanobu Moritani; Hajime Oda, and Toshihide Samejima, all of Tokyo, Japan, assignors to Kabushiki Kaisha Seikosha, Tokyo, Japan

Filed Jul. 6, 1978, Ser. No. 922,433
Claims priority, application Japan, Jul. 5, 1977, 52-80316
Int. Cl.[2] G04F *8/00, 10/00*
U.S. Cl. 368—109 **10 Claims**

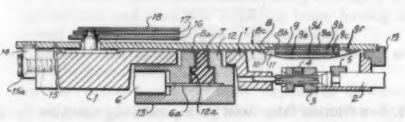


1. An electronic timer comprising:
pulse generating means for generating clock pulses;
a presettable counter for continuously counting the clock pulses;
first means for controlling the counting operation of said presettable counter to selectively count to a desired time count and to continuously count;
storage means for storing the time count counted by said presettable counter upon actuation;
detection means for producing a detection output when said presettable counter has completed the counting from the desired time count therein to a given time count;
alarm generating means for generating an alarm sound in response to the detection output;
stopping means for stopping the alarm sound; and
second means for presetting the time count stored in said storage means into said presettable counter in response to the stopping of the alarm sound.

4,218,872
DISPLAY DEVICE FOR TIMEPIECE

Toshimasa Ikegami, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Jul. 12, 1978, Ser. No. 923,865
Claims priority, application Japan, Jul. 13, 1977, 52-93214[U]
Int. Cl.[2] G04B *19/00, 19/06*
U.S. Cl. 368—82 **12 Claims**

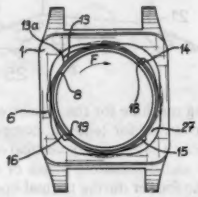


1. A display device for an electronic timepiece, comprising:
a dial having inner and outer portions, at least the inner portion of said dial being of an insulating material, said dial having a first aperture therein;
hands for performing an analog display of time, said hands having axes passing through said first aperture;
an electro-optic digital display element affixed directly to said inner portion of said dial and integral therewith, said display element including connecting terminal means and said dial having a second aperture therein for viewing of said display element;
circuit means for activating said electro-optical display element;
conductor means directly engaging said insulating inner portions of said dial for connecting said circuit means with said connecting terminal means of said display element.

4,218,873
SEALED, SHAPED WATCH-CASE

Jean-Louis Lang, Porrentruy, Switzerland, assignor to Louis Lang S.A., Porrentruy, Switzerland

Filed Dec. 4, 1978, Ser. No. 966,130
Claims priority, application Switzerland, Dec. 15, 1977, 15480/77
Int. Cl.[2] G04B *37/00*
U.S. Cl. 368—281 **6 Claims**



1. A sealed non-circular watch-case comprising a rim having a rearward opening of generally rectangular shape, an inwardly projecting portion forming a shoulder spaced from the front of said rim and an inwardly opening groove rearwardly of said shoulder, a watch glass supported on said shoulder and sealed to said rim, a movement in said case, an elastically compressible retaining ring seated on the rear of said shoulder and retaining said movement, a circular securing ring having at least two opposite projections which in a first rotary position of said securing ring are insertable in opposite corner portions of said generally rectangular opening of said rim and upon rotation of said securing ring to a second rotary position are engageable in said groove of said rim to secure said securing ring in said rim, said securing ring bearing on said retaining ring to compress said retaining ring axially and secure said retaining ring and movement in said case, and a base of said watch-case having portions interengaging cooperating portions of said securing ring to secure said base to said rim.

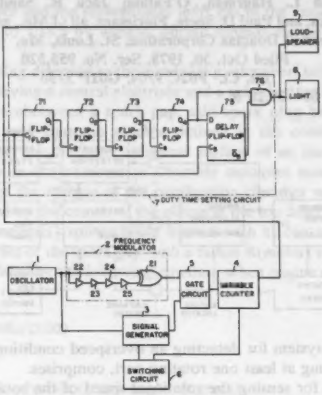
4,218,874
ELECTRONIC METRONOME

Shuichi Ishida; Haruzo Yoshikawa, and Fumio Morohoshi, all of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Jan. 12, 1979, Ser. No. 3,090
Claims priority, application Japan, Jan. 18, 1978, 53-003914
Int. Cl.[2] G04F *5/02;* G10H *5/06*
U.S. Cl. 84—484 **5 Claims**

1. An electronic metronome comprising an oscillator for generating a standard signal, a fundamental tempo signal generator for synthesizing the standard signal to thereby produce the fundamental tempo signal, a duty time setting circuit having flip-flop circuits for dividing the fundamental tempo signal, a delay flip-flop circuit for delaying a predetermined phase of a tempo signal generated from the flip-flop circuits and a gate circuit to which the outputs of the flip-flop circuits and the delay flip-flop circuit are applied for producing an output

signal having an output pulse signal rise time corresponding to the pulse rise time of the fundamental tempo signal, and a light



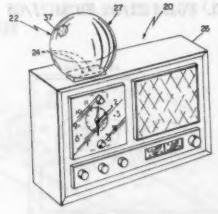
for displaying the output signal generated from the gate circuit.

4,218,875

ALARM

Michael L. Rothman, 21 Commonwealth Rd., Watertown, Mass. 02172

Filed Aug. 26, 1977, Ser. No. 828,047
Int. Cl.[2] G04B *37/12*
U.S. Cl. 368—73 **6 Claims**



1. In an improved alarm clock having an electric clock portion and a removable electric alarm portion, wherein said alarm portion has a signal which emits an audible sound when activated by said clock portion at a preselected time, the improvement comprising,

said alarm portion having an energy storage means for enabling said signal to continue to emit the audible sound after said alarm portion is removed from said clock portion,

said alarm portion being throwable and having an impact switch means adapted to deenergize said storage means upon impact of said thrown alarm portion against an object thereby temporarily closing said switch for deactivating said signal, and

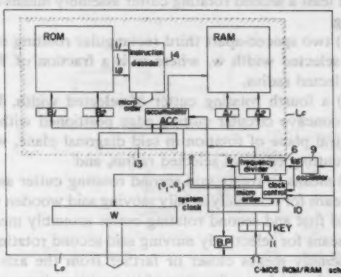
said alarm portion having an impact-absorbing casing to protectively house said signal upon impact, whereby said alarm portion is reusable after impact.

4,218,876

COMBINED TIMEKEEPER AND CALCULATOR WITH LOW POWER CONSUMPTION FEATURES

Shintarou Hashimoto, Shiki; Hirohide Nakagawa, Sakurai, and Toshio Nishimura, Kyoto, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 23, 1977, Ser. No. 854,214
Claims priority, application Japan, Nov. 29, 1976, 51-145452
Int. Cl.[2] G06F *1/00*; G04C *23/00*
U.S. Cl. 368—10 **15 Claims**



1. An integrated circuit device having a timekeeping function comprising:

a generator stage for generating basic clock signals and system clock signals, said system clock signals being obtainable by modifying said basic clock signals;

a processor stage responsive to supply of said system clock signals for executing the operations required for the timekeeping function, said processor stage including a ROM (read only memory)-RAM (random access memory) combination; and

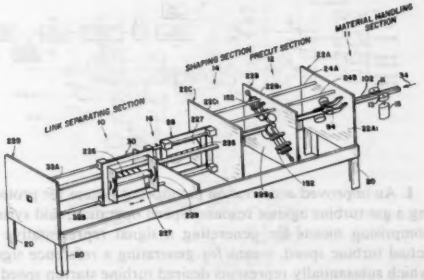
clock control means for preventing said processor stage from being supplied with said system clock signals upon completion of the operations required for said timekeeping function.

4,218,877

MACHINE FOR MAKING WOODEN CHAINS

Elmer L. McLain, Rte. 1, Box 468, Fort Gibson, Okla. 74434

Filed Mar. 13, 1978, Ser. No. 885,855
Int. Cl.[2] B27M *3/00*
U.S. Cl. 59—10 **8 Claims**



1. Apparatus for machining a wooden rod, of square cross-section, of selected length and transverse dimension, to provide a multi-link chain of separate interlinked links, comprising;

A. at least a first rotating cutter assembly means comprising

(1) two spaced-apart first rectangular rotating cutters of selected width W, and means for fixedly positioning

said first cutters in a selected position on a first diagonal plane through said square rod, said rectangular cutters spaced equally on opposite sides of said diagonal plane a selected distance,

(2) a second rotating cutter of selected width comparable to W, having a concave circular cutting edge positioned with its central plane of rotation in said diagonal plane, with said cutting edges at a selected fixed distance from the axis of said rod, and

(3) means to rotate said first rotating cutter assembly;

B. at least a second rotating cutter assembly means comprising

(1) two spaced-apart third rectangular rotating cutters of selected width w, where w is a fraction of W, of selected radius,

(2) a fourth rotating cutter of selected width, having a concave circular cutting edge positioned with its central plane of rotation in said diagonal plane, with said cutting edges of selected radius, and

(3) means to rotate said second rotating cutter assembly;

C. means for relatively axially moving said wooden rod, and said first and second rotating cutter assembly means;

D. means for selectively moving said second rotating cutter assembly means closer or farther from the axis of said wooden rod, as a function of its position along said rod; whereby said links will be formed, but attached sequentially to each other; and

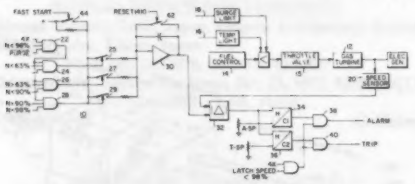
E. means for separating adjacent links.

4,218,878

ACCELERATION MONITORING SYSTEM FOR PROTECTING GAS TURBINE AGAINST DAMAGING OPERATION AT RESONANT SPEEDS

Roy W. Kiscaden, Morton, and Kermit R. Wescott, East Marlboro, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 28, 1978, Ser. No. 900,946
Int. Cl.[2] F02C 7/26
U.S. Cl. 60—39.09 R 3 Claims



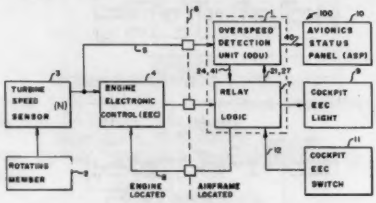
1. An improved acceleration monitoring system for protecting a gas turbine against resonant speed operation, said system comprising means for generating a signal representative of actual turbine speed, means for generating a reference signal which substantially represents desired turbine startup speed as a continuous function of time, means for continuously comparing the actual and reference speed signals and for generating an output representing the difference, means for generating an alarm signal when the difference output reaches a first value which indicates the pssibility of an undesired hold at a resonant speed, and means for generating a turbine trip signal when the difference output reaches a predetermined second value higher than the first value.

4,218,879

OVERSPEED PROTECTION DEVICE

Raymond L. Hagrman, O'Fallon; Jack R. Sandridge, St. Charles, and Paul D. Soete, Florissant, all of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Oct. 30, 1978, Ser. No. 955,520
Int. Cl.[2] F02C 9/04; G01P 3/56
U.S. Cl. 60—39.28 R 17 Claims



17. A system for detecting an overspeed condition in a device having at least one rotating part, comprises:

means for sensing the rotational speed of the rotating part and developing an electrical signal based thereon;

means for processing the speed signal including means for determining an overspeed indication when the part speed reaches a preselected high RPM value, and means for detecting an overspeed indication when the part speed reaches a lower but above normal RPM value and the rate of change of the RPM value exceeds a predetermined limit; and

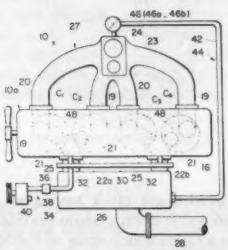
means for generating an overspeed condition signal upon the successive occurrence of said overspeed indications.

4,218,880

SPARK-IGNITION INTERNAL COMBUSTION ENGINE

Hiroshi Kuroda, Tokyo; Yasuo Nakajima, Yokosuka; Yoshimasa Hayashi, and Shin-ichi Nagumo, both of Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 22, 1976, Ser. No. 744,098
Claims priority, application Japan, Dec. 1, 1975, 50-143585
Int. Cl.[2] F02M 25/06; F02D 21/08
U.S. Cl. 60—278 48 Claims



2. A spark-ignition internal combustion engine, comprising:

a combustion chamber defined by the cylindrical wall of a cylinder of the engine, the inner wall surface of the cylinder head of the engine closing the one end of the cylinder, and the crown of a piston reciprocally movably disposed within the cylinder:

air-fuel mixture supply means for producing an air-fuel mixture for the combustion chamber by mixing fuel and intake air inducted into the combustion chamber;

means for adding substantially inert gas to the air-fuel mixture, said substantially inert gas being mixed gases which remain substantially inert after the combustion of the fuel in the combustion chamber, said means for adding sub-

stantially inert gas including control means capable of controlling the ratio of fuel combusted in the combustion chamber and the substantially inert gas in the range from 1:13.5 to 1:18.5 by weight, during normal engine operation;

a spark plug disposed in the combustion chamber, said spark plug having a central electrode and a side electrode defining therebetween a spark gap, said spark plug being located such that the volume defined in the combustion chamber by the inner spherical surface of an imaginary sphere in the combustion chamber occupies more than 35% of the volume of the combustion chamber which is defined by the crown of the piston at the top dead center, said imaginary sphere being formed with its center at the midpoint of the spark gap with a radius R(meter) which is calculated by the following equation when engine speed is 2,000 rpm:

$$R=\theta Rc/12{,}000$$

where,

θ=spark advance (crank angle, degrees)

Rc=combustion rate (m/s).

3. A spark-ignition internal combustion engine as claimed in claim 2, further comprising means for purifying the exhaust gases discharged from the combustion chamber at least by oxidizing the unburned constituents contained in the exhaust gases.

35. A spark-ignition internal combustion engine as claimed in claim 3, further comprising secondary air supply means for supplying said exhaust gas purifying means with air, wherein said air-fuel mixture supply means is arranged to supply an air-fuel mixture having the mean air-fuel ratio lower than stoichiometric.

4,218,881

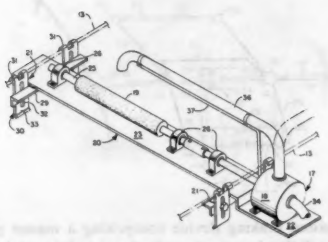
BELT CONVEYOR DRIVE SYSTEM

Robert P. Huffman, Star Route, Kegley, W. Va. 24731, and Jesse Thomas, P.O. Box 269, Princton, W. Va. 24740

Filed May 7, 1979, Ser. No. 36,319

Int. Cl.³ F15B *15/18*

U.S. Cl. 60—325 **12 Claims**



1. In a belt conveyor drive system for underground mines, the combination with a conveyor including an endless belt riding at opposite ends of the conveyor on head and tail rollers and having vertically spaced advance and return flights, whereof the advance flight rides between the head and tail rollers on longitudinally spaced pulley assemblies supported at sides on side members extending substantially the length of the conveyor, of a pump assembly comprising a drive roller drivable off the advance flight, a pump drivably connected to said drive roller, a base mounting said drive roller and pump, and connector means connected to said base for releasably mounting said pump assembly in any selected operative position longitudinally of the conveyor.

4,218,882

HYDRAULIC POWER SYSTEMS FOR VEHICLE BRAKING AND LEVELLING SYSTEMS

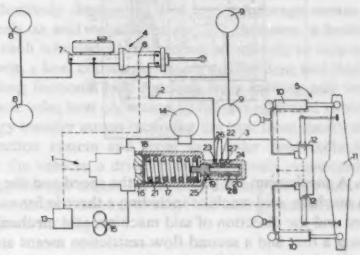
Glyn P. R. Farr, Leek Wootton, England, assignor to Girling Limited, Birmingham, England

Filed May 16, 1978, Ser. No. 906,339

Claims priority, application United Kingdom, May 17, 1977, 20584/77

Int. Cl.² F15B *1/02, 11/16*

U.S. Cl. 60—413 **8 Claims**



1. An hydraulic power system for operating a vehicle levelling system and braking system comprising a reservoir for hydraulic fluid, a pump, an unloader valve assembly and an accumulator, said accumulator being charged by said pump from said reservoir through said unloader valve assembly, said accumulator supplying both said levelling system and said braking system, and pressure limiting means through which said accumulator is connected indirectly to said braking system, said pressure limiting means being adapted to disconnect said braking system from said accumulator when a predetermined pressure is reached.

4,218,883

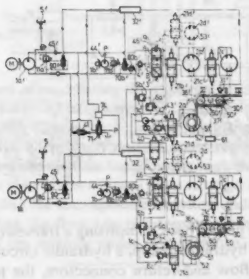
HYDRAULIC SYSTEM FOR OPERATION OF TWO WINCHES

Hakon S. Pedersen, Hop, Norway, assignor to A/S Bergens Mekaniske Verksteder, Bergen, Norway

Filed Aug. 18, 1978, Ser. No. 934,848

Int. Cl.² F15B *11/20*

U.S. Cl. 60—427 **6 Claims**

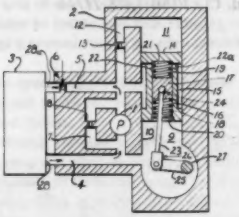


1. Hydraulic system for operation of winches each having friction pulleys and a winch drum, said pulleys and drums being powered by hydraulic motors driven by hydraulic pumps comprising conduits supplying of energy to the motors and valves for control of same, wherein valves are provided for disconnecting the friction pulley motors hydraulically and for supplying of available energy to the winch drum motor.

4,218,884
HYDRAULIC SPEED GOVERNOR

Harold Gold, 3645 Tolland Rd., Shaker Heights, Ohio 44122

Division of Ser. No. 525,687, Feb. 7, 1966, Pat. No. 3,523,742.
This application Nov. 8, 1978, Ser. No. 958,787
Int. Cl.[2] F15B *15/18*
U.S. Cl. 60—431 8 Claims

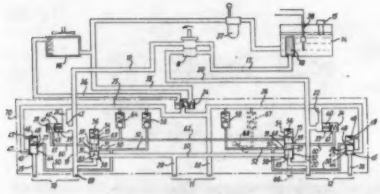


1. A mechanism for controlling the speed and the direction of a machine, said machine including a throttle for varying the speed and the direction of said machine, said mechanism comprising a first and a second flow restriction means and a positive displacement, bidirectional pump means conduited between said flow restriction means, said flow restriction means and said pump means defining a series array, selector means operative to communicate one side of said series array with a pressure source and the opposite side with a drain, or to communicate said opposite side with a pressure source and said one side with a drain, means driving said pump means at a speed proportional to the speed of said machine and in the corresponding direction, actuator means responsive to the pressure gradient across said pump means, and means coupling said actuator means to said throttle.

4,218,885
HYDRAULIC POWER PACKS

Gordon D. White, Tewkesbury, England, assignor to Bredon Hydraulics Limited, Tewkesbury, Great Britain

Filed Nov. 27, 1978, Ser. No. 963,765
Claims priority, application United Kingdom, Nov. 30, 1977, 49792/77
Int. Cl.[2] F15B *21/04*
U.S. Cl. 60—456 2 Claims

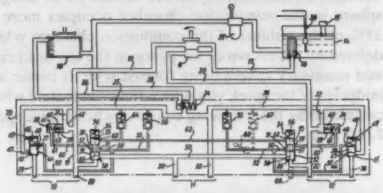


1. A hydraulic power pack comprising a framework, a prime mover driving a hydraulic pump, a hydraulic circuit including a reservoir and flow and return connectors, the power pack including an oil cooling system comprising a thermostatically operated valve provided in said circuit and an oil cooler provided in said circuit, the said valve being arranged to divert flow of fluid to said oil cooler when the temperature of the fluid rises above a predetermined limit before returning the fluid to said reservoir, said oil cooler having a pair of heat exchangers mounted at the respective outlets of a double acting centrifugal fan.

4,218,886
HYDRAULIC POWER PACKS

Gordon D. White, Tewkesbury, England, assignor to Bredon Hydraulics Limited, Tewkesbury, England

Filed Nov. 27, 1978, Ser. No. 963,788
Claims priority, application United Kingdom, Nov. 30, 1977, 49792/77
Int. Cl.[2] F15B *13/09*
U.S. Cl. 60—486 6 Claims

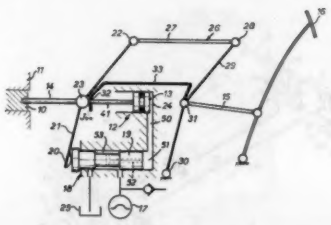


1. A hydraulic power pack comprising a prime mover driving a hydraulic pump, a hydraulic circuit including a reservoir connected to an inlet of said pump, an outlet circuit from said pump, flow and return external connectors in said outlet circuit, a pressure relief valve for controlling the pressure of hydraulic fluid to said flow connector and a pilot operated main relief valve sensitive to flow conditions in said external connectors and adapted to divert the flow of said pump to said reservoir without restriction when no flow occurs through the external connectors.

4,218,88[illegible]
ASSISTED BRAKING DEVICE

Jean L. R. Dauvergne, Fosses, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France

Filed Jul. 5, 1978, Ser. No. 922,233
Claims priority, application France, Jul. 7, 1977, 77 20883; Jun. 27, 1978, 78 19085
Int. Cl.[2] B60T *13/20*
U.S. Cl. 60—550 6 Claims



1. An assisted braking device comprising a master piston mounted for sliding in a master cylinder, a jack in axial alignment with the master cylinder and having a jack piston connected to the master piston by axially aligned interconnection means, thrust means adapted to be operated by a pedal, a source of assisting hydraulic pressure, a distributor adapted to feed the jack with assisting hydraulic pressure from the said source, lever means adapted to operate the distributor in response to a displacement of the thrust means, said lever means comprising an arm of which one end acts on the said distributor, said arm including an articulation by which said arm is mounted for rocking on the said interconnection means, and safety abutment means normally spaced from said arm and said articulation and for bearing against said articulation in the event of the failure of the assisting hydraulic pressure to dis-

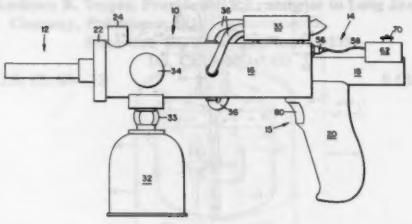
place the master piston through the force directly applied by the thrust means.

4,218,888

IMPACT DEVICE

Michael E. Jayne, 948 N. Pleasant St., Amherst, Mass. 01002

Filed Feb. 12, 1979, Ser. No. 11,108
Int. Cl.[2] F01B *29/08*
U.S. Cl. 60—632 **5 Claims**



1. In an automatic impact delivering tool of the internal combustion type and having a self-contained fuel supply, the improvement comprising:

a body communicating with the fuel supply and with atmosphere,

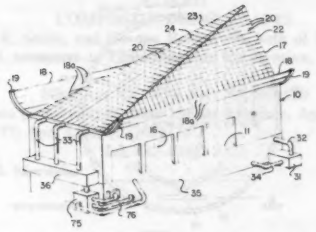
a driver within the body and dividing the body into a compression chamber and a combustion chamber, the driver including a piston having integral valving, fuel metering means integral with the body and driver, ignition means for igniting the fuel air mixture for moving the driver, and trigger means for actuating the driver.

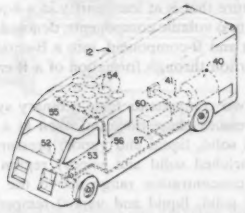
4,218,889

MASS TRANSIT SYSTEMS

Erik F. Buell, Box 418, R.D. #2, Gibsonia, Pa. 15044

Filed Feb. 7, 1979, Ser. No. 10,037
Int. Cl.[3] F01K *13/00*; F24J *3/02*; B60K *1/00*
U.S. Cl. 60—676 **9 Claims**





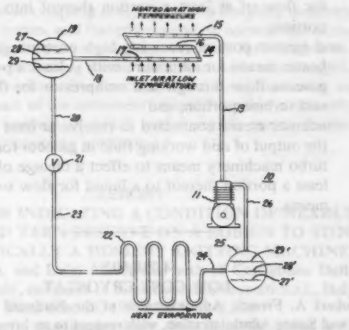
1. A mass transit system comprising a storage building having a roof and an internal storage area for a multiplicity of individual wheel vehicles, a solar energy collection system on the roof of said building, water storage means in said building, a circulating system circulating water from said water storage means through said solar energy collection system for heating said water and storing said heat as heated water in said water storage means, energy conversion means in said building converting said heat in said water storage means to rotary energy, a plurality of wheeled vehicles, energy storage means in each said wheeled vehicle, means connecting said energy conversion means selectively to the energy storage means of each said wheeled vehicle for transferring and storing energy from the water storage means to the energy storage means in said wheeled vehicles, energy transmission means in each wheeled vehicle selectively connecting said energy storage means to drive wheels on said vehicle for driving the same, a braking system in each wheeled vehicle acting selectively to stop said drive wheels, a heat collection system surrounding said brakes for collecting frictional heat resulting from braking said vehicle, a vehicle solar heat collection system on each said vehicle, fluid energy transfer means receiving the heat from the friction heat collection system and from said solar heat collection system on the vehicle, a drive means selectively connected to said energy storage means for adding driving energy thereto, said drive means connected to said fluid energy transfer means and energized thereby.

4,218,890

VAPOR COMPRESSION CYCLE DEVICE WITH MULTI-COMPONENT WORKING FLUID MIXTURE AND IMPROVED CONDENSING HEAT EXCHANGER

Himanshu B. Vakil, and John W. Flock, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 24, 1978, Ser. No. 927,032
Int. Cl.[2] F25B *7/00, 1/00, 43/00, 39/04*
U.S. Cl. 62—114 **5 Claims**



1. A method of modulating the capacity of a vapor compression cycle device which comprises compressing a multi-component working fluid mixture, condensing the mixture vapor by sequential circulation from its hottest region to its coolest region, storing the mixture liquid under high pressure, controlling the flow rate of the mixture from storage, evaporating the mixture, storing the unevaporated mixture under low pressure, and controlling the flow rate of compression by the density of the vapor of the mixture under low pressure.

4,218,891

COOLING AND HEAT PUMP SYSTEMS AND METHODS

Everett H. Schwartzman, 724 Clyoden Rd., Palos Verdes Estates, Calif. 90274

Filed May 22, 1978, Ser. No. 908,270
Int. Cl.[2] F25B *1/00, 27/02, 1/06*
U.S. Cl. 62—116 **30 Claims**

1. A system of the type described for use in heating and

cooling in which at least a portion of the power is from an external source of heat comprising:

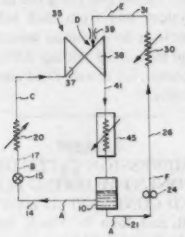
a supply of working fluid which changes phase at a predetermined temperature, a major portion of said working fluid in said supply being in liquid form;

expansion means connected to receive at least a portion of the liquid from said supply for reducing the pressure thereof;

evaporator means receiving said working fluid in liquid form from said expansion means and operative to effect a change of phase of at least a portion of said working fluid to a gaseous phase;

pump means connected to receive working fluid from said supply in liquid form and to increase the pressure thereof;

heat exchanger means powered by said external source of heat and operative to receive high pressure working fluid to effect a change of phase thereof to a high pressure gas;



turbo-machinery means including a compressor portion and a cooperating turbine portion and an ejector portion;

said compressor portion receiving at least a portion of the working fluid in gaseous form from said evaporator means for flow of at least a portion thereof into said turbine portion;

said ejector portion receiving high pressure gas from said heater means for admixture with at least a portion of the gaseous flow through said compressor for flow through said turbine portion; and

condenser means connected to receive at least a portion of the output of said working fluid in gaseous form from said turbo machinery means to effect a change of phase of at least a portion thereof to a liquid for flow to said supply means.

4,218,892

LOW COST CRYOSTAT

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and James B. Stephens, La Crescenta, Calif.

Filed Mar. 29, 1979, Ser. No. 25,162

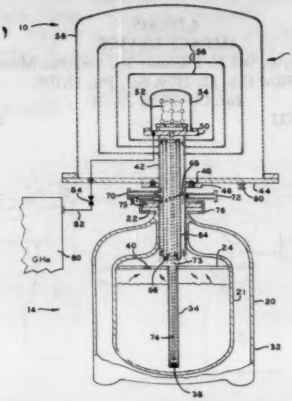
Int. Cl.³ F25B *19/00*

U.S. Cl. 62—514 R **8 Claims**

1. An improved cryostat for use aboard a spacecraft in a gravity-free environment comprising:

A. a mother dewar having an inner vessel confining a primary cryogen in a liquid state, a tubular thimbal extended thereinto, and means for cooling said primary cryogen at low pressures of celestial space including a vent connected with a porous plug communicating with an external surface of the spacecraft; and

B. a plurality of serially useable daughter dewars, each having an experiment package mounted therein and confining a secondary cryogen for cooling the experiment package and including heat pipe means for transferring heat from the secondary cryogen to the primary cryogen comprising a tubular body having an elongated chamber extended the length thereof connected in communication with the experiment vessel and adapted to be telescopi-



cally received by said thimbal in communication with said primary cryogen.

4,218,893

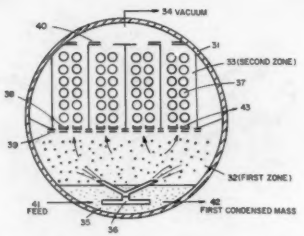
DISTILLATIVE FREEZING PROCESS FOR SEPARATING VOLATILE MIXTURES AND APPARATUSES FOR USE THEREIN

Chen-yen Cheng, 9605 La Playa St., NE., Albuquerque, N. Mex. 87111, and Sing-Wang Cheng, 4th Floor, #1, Lane 479, Fu-Hsing N. Rd., Taipei, Taiwan

Continuation-in-part of Ser. No. 816,852, Jul. 18, 1977, abandoned, and a continuation-in-part of Ser. No. 676,640, Apr. 13, 1976, Pat. No. 4,028,445. This application Aug. 2, 1978, Ser. No. 930,312

Int. Cl.² B01D *9/04*

U.S. Cl. 62—537 **15 Claims**



1. A crystallization separation process for separating a multi-component mixture that is at least partly in a liquid state and includes at least two volatile components, denoted respectively as A-component and B-component, into a B-enriched portion and a B-lean portion through formation of a B-enriched solid mass,

wherein the two components form a binary system whose constant pressure phase diagram taken at a three phase (B-enriched solid, liquid and vapor) pressure has a two phase (B-enriched solid and vapor) region covering a substantial concentration range above the three phase (B-enriched solid, liquid and vapor) temperature and a two phase (B-enriched solid and liquid) region below the three phase (B-enriched solid, liquid and vapor) temperature,

that comprises a first step of forming a first vapor mixture

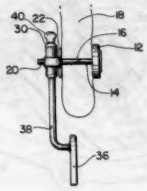
and a first condensed mass that comprises a mother liquor and a solid phase mass enriched in B-component by concurrently vaporizing the two components from the mixture in a first zone under a first temperature and a first pressure that are respectively lower than the triple point temperature and the triple point pressure of the pure B-component.

4,218,894

PIERCED EARRING WITH ADJUSTABLE ORNAMENT

Amilcare R. Tropea, Providence, R.I., assignor to Lang Jewelry Company, Providence, R.I.

Filed Oct. 10, 1978, Ser. No. 950,239
Int. Cl.² A44C 7/00
U.S. Cl. 63—13 **9 Claims**



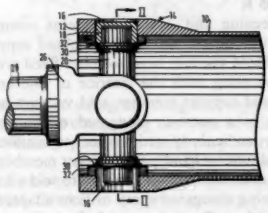
1. An earring for pierced ears comprising a post adapted to pass through the pierced ear opening, said post including a primary ornament at one end thereof and, a primary clutch for receipt of the other end of said primary post so as to support said earring from said ear, a secondary ornament secured to a secondary post, a sleeve forming a secondary clutch secured to said primary clutch, said secondary post slidably frictionally received in said secondary clutch whereby said secondary ornament is slidably adjustable towards and away from said primary ornament, said primary clutch rotatable about said primary post and said secondary post being rotatable about its longitudinal axis relative to said secondary clutch while mounted therein.

4,218,895

COMPOSITE DRIVE SHAFTS

Derek R. Smith, and Gordon P. Worgan, both of Bristol, England, assignors to Union Carbide Corporation, New York, N.Y.

Filed Apr. 21, 1978, Ser. No. 898,900
Claims priority, application United Kingdom, Apr. 28, 1977, 17695/77; Apr. 4, 1978, 17695/78
Int. Cl.² F16D 3/26
U.S. Cl. 64—1 S **10 Claims**



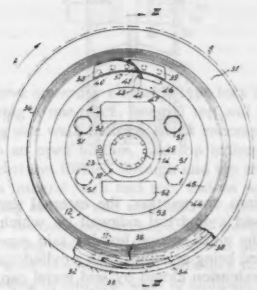
1. In a combined drive shaft and universal joint arrangement including a cross-shaped coupling member having the end portions of one limb thereof supported for rotation within a pair of journal bearings, one at each end portion of said limb, wherein the main portion of said drive shaft is tubular and consists of reinforcing fibres set in a rigid matrix of synthetic resinous material, the improvement whereby the overall weight of the combined drive shaft and universal joint is kept to a minimum, said improvement comprising forming an end portion of the drive shaft for receiving said journal bearings as a tubular extension of the main portion of the shaft and as an integral part thereof consisting also of reinforcing fibres set in a rigid matrix of synthetic resinous material and having aligned, diametrically opposed bores in which each journal bearing is mounted.

4,218,896

OVERLOAD COUPLINGS

Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Filed Jan. 31, 1978, Ser. No. 873,933
Claims priority, application Netherlands, Feb. 1, 1977, 7701013
Int. Cl.² 192 56 R; F16D 9/00
U.S. Cl. 64—28 R **79 Claims**



1. An overload coupling comprising two coupling members and frangible means, said frangible means, in normal operation, interconnecting said two coupling members for rotation together, rotary advancing means associated with said frangible means that advances, after fracture of said frangible means, an unfractured part of the remainder of said frangible means into an operative position in which said frangible means re-connects said two coupling members.

4,218,897

DEVICE FOR INDICATING A CONDITION OF NEARLY EXHAUSTED YARN RESERVE ON A BOBBIN TO STOP AUTOMATICALLY A HOSIERY KNITTING MACHINE

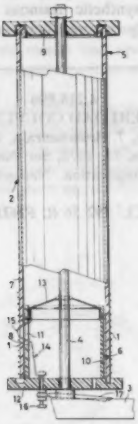
Sergio Zaglio, and Luigi Marchetti, both of Castiglione Delle Stiviere, Italy, assignors to Internazionale Brevetti S.r.l., Italy

Filed Jan. 23, 1979, Ser. No. 5,981
Claims priority, application Italy, Oct. 25, 1978, 29090 A/78
Int. Cl.² D04B 35/12
U.S. Cl. 66—163 **1 Claim**

1. A device for detecting a condition of forthcoming exhaustion of yarn that is wound on the cylindrical sidewall of a bobbin, and for causing the automatic stoppage of an associated circular hosiery knitting machine or the like, comprising, for each bobbin,

a movable electric contact associated with the bobbin, and disposed to be pushed resiliently to a radially projecting position from the sidewall of the bobbin but normally held in a radially retracted position in the bobbin by the yarn wound around the bobbin, said movable electric contact being an integral part of a two-position switch inserted in an electric checkup circuit for the machine so as to cause the automatic stoppage of same when said movable contact is in said radially projecting position as a result of the approaching to a condition of exhaustion of the yarn around the bobbin, said electric movable contact being housed within the bobbin and being resiliently biased to

have a portion thereof projecting radially out of the bobbin through a slit formed through said sidewall thereof, said movable electric contact cooperating with a fixed electric contact on the bobbin composed of a metal cap roughly cylindrical and through which a bobbin-centering cylindrical stud passes in electric contact with said cap, said bobbin being made in two releasably connected sections



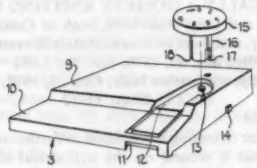
inserted into one another, the external section forming part of said cylindrical sidewall on which the yarn is wound, the inner section housing said movable electric contact and being provided with a cylindrical sidewall of reduced extension closed by said metal cap, and having formed therethrough a slit which is aligned with the first-named slit and through which slits said portion of the movable contact is urged to project.

4,218,898

TIMER, STEPPING DEVICE, HINGE AND LAUNDRY HANDLING MACHINE

Lodewijk J. T. Boyen, Alleur, and Rene N. J. D'Huys, Tongeren, both of Belgium, assignors to ITT Industries, Inc., New York, N.Y.

Filed Sep. 8, 1978, Ser. No. 940,692
Int. Cl.[3] D06F *33/06, 39/14*
U.S. Cl. 68—12 R **2 Claims**



1. In a laundry handling machine having a drum and a vat provided with a cover, wherein:

said cover includes an upper surface having a rear portion with a recess therein and an inclined front portion, an annular part in said recess with said annular part raised with respect to the recess, a washing program selection knob having a hollow stem with said hollow stem fitting into said annular part;

a laundry machine driven member having a dome-shaped part with said hollow stem being slid on said dome-shaped part, a rib on said dome-shaped part, said hollow stem having at least a first slit fitting around said rib; and

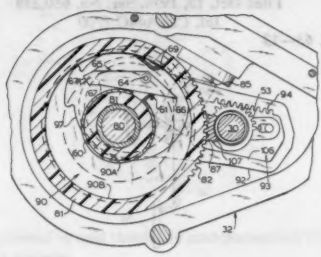
a driven bistate device operably connected to said driven member, a timer including a motor reversible by said bistate device for changing the direction of rotation of said drum at a predetermined angle of rotation of said drum.

4,218,899

AUTOMATIC WASHER SPIN DELAY MECHANISM

Anthony Mason, Lincoln Township, Berrien County, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jun. 12, 1979, Ser. No. 47,747
Int. Cl.[2] D06F *37/40*
U.S. Cl. 68—12 R **9 Claims**



1. In an automatic laundry appliance including,

a motor selectively coupled to a first drive means for agitating a clothes load and a second drive means for spinning a clothes receptacle containing said clothes load, and

a presettable sequential control means for controlling a cycle of operation including a period when said first drive means is decoupled followed by a period when said second drive means is coupled to said motor;

a delay means for delaying coupling of said second drive means until said first drive means is completely decoupled comprising:

an automatically actuatable rotating engagement means for drivingly engaging said second drive means; and

a means for delaying engagement of said engagement means with said second drive means for a period of substantially one revolution of said engagement means after said engagement means has been automatically actuated by said control means operating through said sequence.

4,218,900

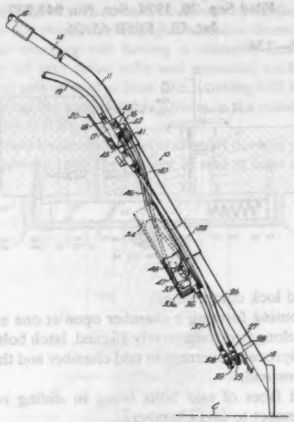
CARPET CLEANING AND DYEING APPARATUS

Lew Caplan, 310 NW. 71st St., and Robert W. Kemper, 10 NW. 71st St., both of Miami, Fla. 33150

Filed Aug. 6, 1979, Ser. No. 64,092
Int. Cl.[3] D06B *1/08*
U.S. Cl. 68—205 R **7 Claims**

1. Carpet cleaning and dyeing apparatus comprising, in combination, an elongated tubular handle and support member, a hollow, flared vacuum head member fixed with respect to and communicating with the interior of one end of said tubular handle and support member, said vacuum head member terminating in a narrow, elongated opening extending substantially perpendicularly with respect to longitudinal axis of said elongated tubular handle and support member, first and second spray nozzles secured with respect to said vacuum head member and having elongated spray orifices adapted to spray fluid in fan-shaped configuration and in laterally spaced relation with respect to said flared vacuum head member elongated opening, means for supplying pressurized fluid, selectively, to one of said spray nozzles for carpet cleaning, means for supplying pressurized carpet dyeing solution, selectively, to the other of said spray nozzles, valve means supported on said elongated tubular handle and support member for manual

control of pressurized fluid selectively supplied to said spray nozzles, said means for supplying pressurized fluid to said one of saidspray nozzles comprising a first conduit means communicating between said valve means and said one of said spray nozzles, said means for supplying pressurized carpet dye solution to said other of said spray nozzles comprising a second conduit means communicating between said valve means and



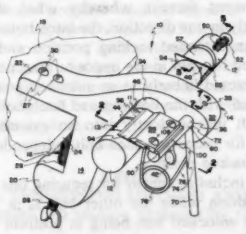
said other of said spray nozzles, a dye container, a housing member supported on said tubular handle and support member, said dye container being receivable in said housing member, flexible conduit means communicating between said dye container and said second conduit means, and a venturi opening member at the juncture of said flexible conduit means with said second conduit means for withdrawing dye from said dye container into the fluid flow path of said second conduit means.

4,218,901

SYSTEM FOR WORKING LEATHER AND LIKE FLEXIBLE SHEET MATERIAL

Joseph F. Hacking, 2388 N. 3500 West, Vernal, Utah 84078

Filed Jun. 19, 1978, Ser. No. 916,439
Int. Cl.[2] C14B *19/00*
U.S. Cl. 69—21 **14 Claims**



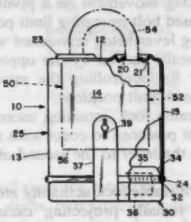
11. A method of sizing an elongated segment of rawhide leather and the like comprising the steps of releasably mounting in a stationary position a multi-purpose rawhide leather cutting tool at an exposed site, pulling the segment along a recess in a first member the depth of the recess varying from point to point, the recess comprising only a part of the entire tool against an angularly disposed cutting edge of a second member of the tool transversely bridging the recess following selectively adjusting the bridging site of the cutting edge to correlate the thickness of the segment desired with the recess depth at the bridging site without altering the mounting arrangement at the exposed site and without manually grasping any part of the tool and causing the cutting force thereby generated to be transferred to the exposed tool mounting site thereby slicing from the segment material in excess of the depth of the recess at the bridging site.

4,218,902

PROTECTIVE COVER FOR SHACKLE LOCK

William O. Druschel, Raemont Rd., Granite Springs, N.Y. 10527

Filed Jul. 7, 1978, Ser. No. 922,792
Int. Cl.[2] E05B *67/38*
U.S. Cl. 70—55 **11 Claims**



1. A protective cover for a shackle type lock comprising:

a body having a one-piece, integral top and downwardly depending side walls defining a lock encompassing enclosure with an open bottom, said top including a pair of spaced apertures formed through said top and defined by ring seals integral with said top, and an accordian fold surrounding each of said ring seals to permit linear and rotational flection therebetween, said enclosure top and side wall being resilient to permit lateral displacement of said ring seals to accommodate variously sized locks, and permit flexing of said side walls to facilitate assembly of a lock in said integrally formed enclosure, and to provide access to side mounted lock tumblers; and

a closure shaped to sealably fit within the open bottom of said enclosure.

4,218,903

LOCK MECHANISM

Charles L. Eads, Palm Springs, Calif., assignor to Adams Rite Manufacturing Co., Glendale, Calif.

Filed Apr. 17, 1978, Ser. No. 897,180
Int. Cl.[2] E05B *59/00, 63/14, 65/02, 65/06*
U.S. Cl. 70—107 **24 Claims**

1. A locking mechanism for a movably mounted door having a relatively narrow stile comprising:

(a) a casing structure positionable in said stile adjacent a vertical face thereof;

(b) a bolt supported in said casing for selective movement to a retracted unlocked position within said casing and to an extended locked position;

(c) a bolt actuating lever supported between its ends in said casing for rocking movement on a pivotal axis between angularly disposed bolt operating limit positions, one end of said actuating lever being connected with said bolt;

(d) escapement means carried by the opposite end of said actuating lever for controlling the movements of said lever between said limit positions, including:

an extension arm projecting beyond the opposite end of said actuating lever, said arm being supported on said opposite end for relative movements; and

(e) lock actuating means including a manually operable element swingably rotatable in opposite directions, and upon rotation in each of said opposite directions being initially engageable with the outer end of said arm at the first of said limit positions, and thereafter actuatable to shift the lever to the second of said limit positions in which the arm is in an escapement operative position blocking the path of movement of said element, whereupon contin-

ued movement of the element operates to movably shift the arm relative to the lever to a released position permitting passage of the element.

24. A locking mechanism for a movably mounted door having a relatively narrow stile, comprising:

(a) a casing structure positionable in said stile, adjacent a vertical edge face thereof;

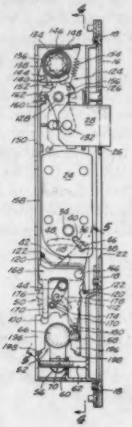
(b) a main bolt supported in said casing for selective movement to a retracted unlocked position within said casing and to an extended locked position;

(c) a bolt actuating lever supported between its ends in said casing for rocking movement on a pivotal axis between angularly disposed bolt operating limit positions, one end of said actuating lever being connected with said bolt;

(d) escapement means carried by the opposite end of said actuating lever for controlling the movements of said lever between said limit positions;

(e) manually operable lock actuating means operable at a first of said limit positions to coact with said escapement means and shift the lever to the second of said limit positions;

(f) said manually operable lock actuating means comprising a key-actuated radially projecting camming arm supported for rotative movements in opposite directions to effect movement of the main bolt respectively to its unlocked and locked positions;



(g) latching means including a latch bolt supported on said casing, in spaced relation to said main bolt, for movement between a retracted unlatched position and an extended latched position, and being normally urged towards its extended position;

(h) other manually operable means adjacent said latch means for actuating said latch bolt to said unlatched position;

(i) connection means between said main bolt and said latch bolt, activated in the unlocked position of said main bolt, for enabling actuation of said latch bolt to said unlatched position by means of said manually operable lock actuating means;

(j) said connection means including an elongated latch actuator bar mounted at the rear of said casing structure for reciprocable movements in opposite directions, one end of said bar being operatively associated with said latch bolt and its other end being operatively associated with said manually operable lock actuating means; and

(k) a pivoted arm extension carried by the other end of said bar and connected with said bolt actuating lever for movement thereby to an active position when the main bolt is in an unlocked position, and an inactive position when the main bolt is in a locked position, and in said active position being engageable by said actuating camming arm and operable thereby to move the latch actuator bar in a direction to actuate the latch bolt to a non-latched position.

4,218,904

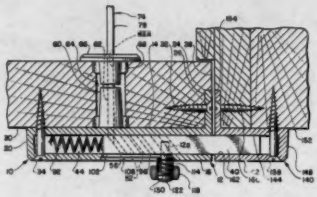
DOUBLE BOLT LOCK

Roman Kiselman, Los Angeles, Calif. 90046

Filed Sep. 20, 1978, Ser. No. 943,937

Int. Cl.[2] E05B *65/06*

U.S. Cl. 70—134 **8 Claims**



1. A dead lock comprising:

a lock housing forming a chamber open at one end,

a pair of elongated transversely aligned, latch bolts mounted for reciprocal movement in said chamber and through said open one end,

elongated faces of said bolts being in sliding relationship with respect to said chamber,

a first face on one bolt and a first face on the other bolt, said first faces being opposite each other,

said first faces having a pattern of alternate, allochirally arranged lands and grooves,

said lands and grooves extending obliquely away from one end of the bolts toward the other end,

said housing having a keyhole extending therethrough in alignment with said first faces of said bolts,

a key having a handle and a shaft extending from the handle, said shaft having a cross-sectional size and shape substantially corresponding to the size and shape of the keyhole,

opposite edges on said shaft having alternate lands and grooves complementary respectively to corresponding grooves and lands of the latch bolts,

said key having a reciprocal path of travel through the keyhole during which the lands and grooves of the shaft engage respective grooves and lands of the latch bolts for linear movement therein, whereby when the shaft is moved linearly in one direction, the latch bolts are moved linearly to an extended locking position and when the shaft is moved linearly in the opposite direction the latch bolts are retracted linearly to an unlocked position, and

means associated with the housing and latch bolts for moving each bolt independently into an extended locking position and for retracting each bolt independently into a retracted unlocked position,

said last means including means for securing one bolt in the unlocked position while the other bolt is in the locked position, said unlocked bolt being in position to prevent entry of the key to unlock the locked bolt.

4,218,905

ROLLING MILL

Rolf Lehmann, Rudolfstetten, Switzerland, and Wolf-Gunter Stotz, Ravensburg, Fed. Rep. of Germany, assignors to Escher Wyss Limited, Zurich, Switzerland

Filed Nov. 1, 1977, Ser. No. 847,601

Claims priority, application Switzerland, Nov. 2, 1976, 13783/76

Int. Cl.[2] B21B *37/00, 13/14, 29/00*

U.S. Cl. 72—21 **29 Claims**

1. A rolling mill which comprises:

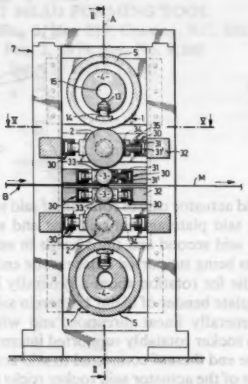
(a) a frame;

(b) at least two drive rolls mounted for rotation in said frame;

(c) at least one backing roll mounted for rotatable engagement with each drive roll to rotatably support said drive rolls;

(d) at least one working roll mounted for rotation between said drive rolls and for rotational engagement with at least one of said drive rolls so as to be driven by surface friction between the respective engaged surfaces thereof, said at least one working roll having a diameter less than the diameter of said drive rolls and mounted such that the rotational axis of said at least one working roll is substantially within the same working plane as the rotational axes of said drive rolls;

(e) at least two hydrostatic lateral support devices positioned in engagement with the surface of said at least one work-



ing roll to provide lateral support forces for said at least one working roll, said forces being in a direction to prevent unwanted movements of said at least one working roll with respect to said working plane;

(f) sensing devices in direct physical contact with a surface of said at least one working roll to sense the position of said at least one working roll;

(g) a valve device in combination with each sensing device and directly actuated thereby to control the pressure of the hydraulic pressure medium directed to said hydrostatic lateral support devices and to operate in dependence upon the position of said at least one working roll with respect to said working plane sensed by said associated sensing device so as to maintain the position of said at least one working roll in a predetermined relation relative to said working plane.

4,218,906

MATERIAL TENSIONING METHOD AND APPARATUS

Keiichiro Yoshida, 641 Mobara, Mobara City, Chiba Prefecture, Japan

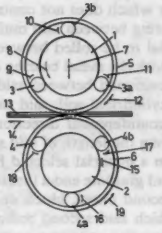
Filed Dec. 13, 1978, Ser. No. 968,971
Claims priority, application Japan, Feb. 15, 1978, 53-16235
Int. Cl.[2] B21D *1/02*; B21B *37/08*; B21C *1/02*
U.S. Cl. 72—183 **4 Claims**

1. A material tensioning apparatus for placing a continuous strip of material or stock under an applied high tension for a drawing, straightening or stretching process, comprising:

a pair of parallel horizontal upper and lower driving shafts;

a pair of elastic metallic rings rotatably mounted on the respective driving shafts and having peripheral portions opposed to each other for holding the material therebetween, each elastic metallic ring being sufficiently elastic for having an elastic deformation for increasing the area of said rings in contact with the material in the direction of the circumference of said ring as force applied from said ring to the material increases; and

a plurality of axially rotatable rollers interposed between each driving shaft and each ring and rotatably supporting said rings on said driving shafts and engaging said driving



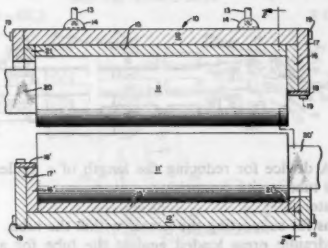
shafts and said rings for rotatably driving said rings from said driving shafts, two adjacent rollers of said rollers in each plurality being positioned at substantially equal peripheral distances on opposite sides of the point at which said rings contact the material being tensioned.

4,218,907

ROLLING MILL BEARING ASSEMBLY

Robert C. Ruhl, Cleveland Heights, Ohio, assignor to Kennecott Copper Corporation, New York, N.Y.

Filed Jan. 31, 1979, Ser. No. 7,909
Int. Cl.[3] B21B *13/14*
U.S. Cl. 72—241 **2 Claims**



1. A rolling mill assembly for rolling metal comprising:

1. a first roll assembly including a first chock block for housing a first rolling roll, a first cylindrical rolling roll housed by said first chock block, said rolling roll having a neck extending through one end of the assembly, said neck providing the means for applying torque to said first roll for driving said first roll, a radial bearing assembly comprised of multiple bearing elements and at least one spacer which does not contact said first rolling roll, said spacer being between said multiple bearing elements to enable a material to be rolled between roll surfaces which make no contact with the radial bearing assembly, said bearing assembly being positioned between said first chock block and said first cylindrical roll, said bearing elements extending in a circumferential direction around said first rolling roll and along the length of said first rolling roll and being formed from a material selected from a member of the group of carbon and graphite, and a thrust bearing positioned in the end of said first chock block opposite the end of the assembly from which said first roll is driven, said thrust bearing contacting at least a portion of the end face of said rolling roll;

2. a second roll assembly including a second chock block for housing a second rolling roll, a second cylindrical rolling roll

housed by said second chock block, said rolling roll having a neck extending through one end of the assembly, said neck providing the means for applying torque to said second roll for driving said second roll, said second roll being positioned in said second chock block so that its neck is facing a direction opposite that which the neck on said first roll faces, a radial bearing assembly comprised of multiple bearing elements and at least one spacer which does not contact said second rolling roll, said spacer being between said multiple bearing elements to enable a material to be rolled between roll surfaces which make no contact with the radial bearing assembly, said bearing assembly being positioned between said second chock block and said second cylindrical roll, said radial bearing elements extending in a circumferential direction around said second rolling roll and along the length of said second rolling roll and being formed from a material selected from a member of the group of carbon and graphite and a thrust bearing positioned in the end of said second chock block opposite the end of the assembly from which said second rolling roll is driven, said thrust bearing contacting at least a portion of the end face of said second rolling roll; and,

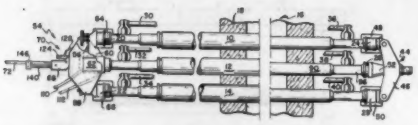
3. means for moving said rolling rolls relative to one another to produce a separation therebetween suitable for rolling metal to a desired thickness.

4,218,908

DEVICE AND METHOD FOR SHORTENING REACTOR PROCESS TUBES

Charles E. Frantz; William K. Alexander, and Walter E. B. Lander, all of Richland, Wash., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 24, 1979, Ser. No. 5,947
Int. Cl.³ B21D *3/10*; G21C *21/00*
U.S. Cl. 72—302 **15 Claims**



12. A device for reducing the length of a nuclear reactor process tube in situ comprising:

a heater,

means for supporting the heater within the tube,

a hydraulic press loaded against the tube for applying a longitudinal force to the tube effective to cause a heated portion of the tube to upset with an attendant decrease in the length of the heated portion of the tube, and

means for restraining movement of the tube by securing the tube to adjacent tubes.

4,218,909

PLATE BENDER

Norman D. Wright, 101 Cardinal Dr., St. Clair, Ill. 62221

Filed Jul. 17, 1978, Ser. No. 925,192
Int. Cl.³ B21D *5/04*
U.S. Cl. 72—320 **5 Claims**

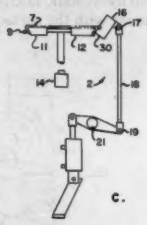
1. A plate bender, comprising:

support means for receiving a plate to be bent, said support means including end dies having contours the same as those desired for the ends of the plate after bending, each of said end dies having a first contour, and at least one of said dies having a second contour directed in an opposite sense to the first contour;

means for moving said support together with said plate thereon along a path between a first position and a second position including means for driving said support means upwardly from said first position to said second position;

means engageable with at least one end of said plate as said plate together with said support means moves along its path for forming a first bend in one end of said plate in one direction; and

means actuable upon forming of said first bend for forming a second bend on said first contour and a third bend on said second contour in the one end of said plate, said third bend being made in an opposite sense to said second bend, said forming means including shear means rotatably supported relative to a respective end die of said support, and means for rotating said shear means relative to said end die so as to form said second and third bend, said last-mentioned means comprising an actuator and a linkage interconnecting said actuator and said shear means whereby actuation



of said actuator causes rotation of said shear means so as to form said plate against said first and second contours to form said second and third bends in said plate, said shear means being supported adjacent the end of said respective end die for rotation about a generally horizontal axis.

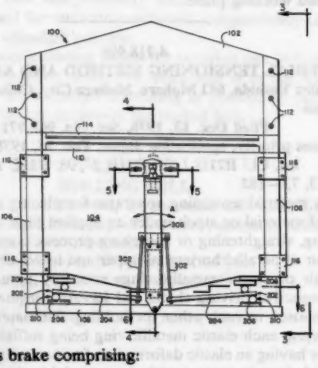
2. The plate bender of claim 1 wherein said actuator is movable in generally linear direction, and wherein said linkage includes a rocker rotatably supported intermediate its ends and having one end thereof connected to said actuator so that upon movement of the actuator said rocker rocks on its support, said linkage further comprising a shaft interconnecting said rocker and said shear means so that upon actuation of said actuator, said shear means rotates about said horizontal axis.

4,218,910

PRESS BRAKE

Francis J. McCabe, 239 Hastings Ct., Doylestown, Pa. 18901

Continuation-in-part of Ser. No. 887,258, Mar. 16, 1978, which is a continuation of Ser. No. 736,823, Oct. 29, 1976, Pat. No. 4,080,860, which is a continuation-in-part of Ser. No. 650,926, Jan. 21, 1976, Pat. No. 4,004,480. This application Jan. 31, 1979, Ser. No. 7,995
Int. Cl.³ B21D *5/02*
U.S. Cl. 72—389 **7 Claims**



1. A press brake comprising:

(a) a frame;

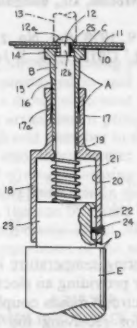
(b) a horizontally elongate die mount, said die mount fixed with respect to said frame;
(c) a horizontally elongate ram mount mounted opposite said die mount for reciprocal movement with respect to said die mount;
(d) a single actuating means for causing said reciprocal movement of said ram with respect to said die mount said actuating means affixed to a support member having a first end mounted on said frame and a free end slideably positioned adjacent said ram mount by a mounting collar; and
(e) force amplification means attached to said actuating means for amplifying force applied by said actuating means and for transmitting said force to said ram mount at at least two spaced apart positions along the elongate axis of said ram.

4,218,911

RIVET HEAD FORMING TOOL

Jerry A. Johnston, Rte. 6, Box 219, Conway, S.C. 29526

Filed Feb. 2, 1979, Ser. No. 9,249
Int. Cl.³ B21J *15/40*
U.S. Cl. 72—479 **5 Claims**



1. A tool for supporting and backing while forming a rivet head on a shank passing through stock opposite a manufactured head engaged by a rivet gun comprising:
an elongated tubular base having an open central chamber therein;
an elongated plunger carried for axial movement in said central chamber;
a stock engaging surface carried on one end of said base;
means maintaining an adjacent end of said plunger in spaced relation with said stock by an amount accommodating the height of the formed rivet head; and
a weight carried by said plunger opposite said adjacent end thereof;
whereby the force of the rivet gun is exerted against the plunger and the weight carried thereby supporting and backing the rivet while the head is being formed

---

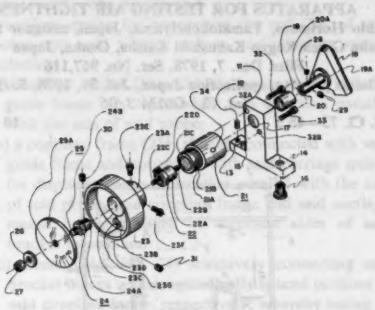
4,218,912

BALLISTIC DRIVE SYNCHRONIZER

Edward A. Antesberger, Fairfax, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 5, 1979, Ser. No. 1,332
Int. Cl.³ G01M *13/02*
U.S. Cl. 73—1 E **5 Claims**

1. In the process of installing a ballistic drive system for the main gun of a main battle tank, or the like; wherein said drive system includes a first half of an Oldham coupling to provide a variable angular adjustment of a mirror within a sight mounted on a bracket on the tank relative to angular adjustments provided for said main gun; the method of correllating said adjustments comprising the steps of:
substituting a ballistic drive synchronizer in place of said sight, said synchronizer having a base support means dimensional to exactly fit said bracket, a bearing in said base support means to accurately position a duplicate second half of an Oldham coupling in said first half and



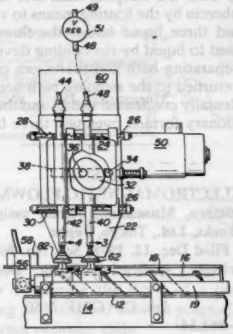
indicia plate means to measure the change of relative angular position between said second half and said base support; and
manually rotating said second half successively in opposite directions to measure the play therebetween.

4,218,913

APPARATUS FOR INSPECTING PLASTIC CONTAINERS

Gary Comfort, Gillett, Pa., assignor to Powers Manufacturing, Inc., Elmira, N.Y.

Filed Apr. 12, 1979, Ser. No. 29,494
Int. Cl.² G01M *3/32*
U.S. Cl. 73—45.2 **5 Claims**



1. Apparatus for inspecting plastic containers comprising a conveyor for conveying plastic containers to be inspected at a test station, a carriage supported by a frame at an elevation above the elevation of the conveyor at the test station, motor means for reciprocating said carriage parallel to said conveyor and in synchronization with the displacement of the container, first and second spindles supported by said carriage for movement toward and away from the elevation of said conveyor, said first spindle being upstream from said second spindle, means including an air injection head on the lower end of the first spindle for attaining sealing contact with the rim of a container and for introducing pressurized air into the container at sufficient pressure to blow out any dents in the container, means including a head connected to the lower end of a second spindle for pneumatically testing a container for leakage after the container has been processed by the first spindle, and

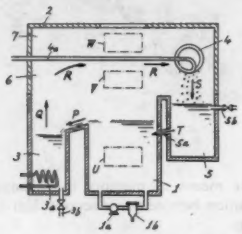
means for moving said spindles in unison with respect to said carriage in a direction toward and away from the elevation of said conveyor.

4,218,914

APPARATUS FOR TESTING AIR TIGHTNESS

Toshio Horimoto, Yamatokouriyama, Japan, assignor to Ohtsuka Giken Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 7, 1978, Ser. No. 967,116
Claims priority, application Japan, Jul. 31, 1978, 53/93781
Int. Cl.[2] G01M *3/06*
U.S. Cl. 73—45.5 **10 Claims**



1. An apparatus for air tightness testing comprising a steeping bath **1** positioned at a central position of the apparatus, a boiling bath **3** which has a heating means and is positioned along by the steeping bath at one side thereof, a cooling device **4** supported in the air at the other side of the steeping bath and a water separating bath **5** positioned under the cooling device; wherein a liquid fluorocarbon selected from the group consisting of

1,1,2-trichloro-1,2,2-trifluoroethane,

trichloro-monofluoromethane, and

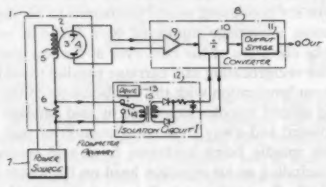
1,1,2,2-tetrachloro-1,2-difluoroethane, and which is overflowing from the steeping bath into the boiling bath, is boiled therein by the heating means to volatilize spreading over said three liquid baths, the fluorocarbon vapor is condensed to liquid by the cooling device to drip into the water separating bath and therefrom only the fluorocarbon is returned to the steeping bath being separated from an incidentally condensed water, and thereby a vapor bath **6** is stationary formed over said three liquid baths.

4,218,915

ELECTROMAGNETIC FLOWMETER

Takashi Torimaru, Musashino, Japan, assignor to Hokushin Electric Works, Ltd., Tokyo, Japan

Filed Dec. 12, 1978, Ser. No. 968,693
Claims priority, application Japan, Dec. 15, 1977, 52-167630[U]
Int. Cl.[3] G01F *1/60*
U.S. Cl. 73—861.16 **6 Claims**



1. In an electromagnetic flowmeter adapted to measure the flow rate of fluid which passes through a flow tube to intercept a magnetic field established by an excitation coil supplied through an excitation circuit with a direct current or a current whose frequency is lower than that of a commercial AC power source, thereby inducing a signal indicative of flow rate in a pair of electrodes mounted in the tube; a circuit arrangement to derive from the excitation circuit a DC reference voltage to be used either to maintain the excitation current constant to render said signal independent of fluctuations in said excitation current or to correct for the adverse effect of excitation current fluctuations on the flow rate signal, said arrangement comprising:

A an excitation-current detector coupled to the excitation circuit to produce a detection voltage proportional to the excitation current; and

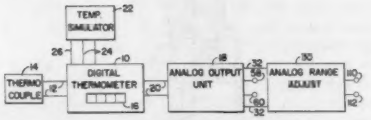
B an isolation circuit coupled to said detector, said circuit including means to modulate the detection voltage at a frequency higher than said excitation current frequency to convert it to a high-frequency AC voltage, a DC isolator, a demodulator and means to feed said AC voltage through said DC isolator to said demodulator to produce said DC reference voltage.

4,218,916

DIGITAL THERMOMETER MODIFICATION FOR TELEMETRY AND ANALOG RECORDING

John S. Mutziger, East Moline, Ill., assignor to Deere & Company, Moline, Ill.

Filed Feb. 9, 1979, Ser. No. 11,059
Int. Cl.[3] G01K *1/02, 7/14*
U.S. Cl. 73—359 R **11 Claims**



1. A system for measuring temperature including temperature responsive means for providing an electrical signal indicative of temperature, and circuit means coupled to the temperature responsive means for receiving the signal, the circuit means including indicator means responsive to the signal for providing an indication of temperature, the improvement comprising:

output means connected to the circuit means for providing a variable level output signal indicative of the temperature indication provided by the indicator means, the output means including means for adjusting the variable level output signal to provide an output signal variation from a first preselected level to a second preselected level as the indicator means varies between a first and a second temperature indication; and

signal simulating means connected to the circuit means for selectively providing an adjustable calibrating signal thereto and causing the indicator to indicate a temperature between the temperatures corresponding to the first and second temperature indications, inclusive, regardless of the temperature indicative signal for adjusting the variable level output signal means to provide the output signal corresponding to the calibrating signal.

4,218,917

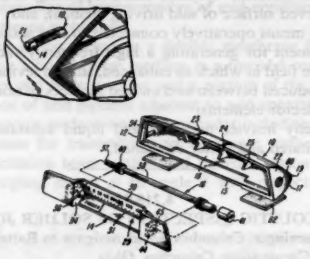
OUTDOORS THERMOMETER UNIT

Robert K. Stortz, Brookfield, Wis., assignor to The Ohio Thermometer Company, Springfield, Ohio

Filed Nov. 13, 1978, Ser. No. 959,720
Int. Cl.[3] G01K *1/14*
U.S. Cl. 73—378 **22 Claims**

1. A thermometer device for application to the exterior of a structure, particularly advantageous for application to a vehicle, to have one face thereof viewed from the interior of the structure to which it is applied, including a thermometer element having a temperature sensing portion and a readout

portion, a housing one face of which has a longitudinally extending portion thereof which is recessed to nest said readout portion of said thermometer element intermediately of and in a sheltered relation to portions of said housing which bound said recessed portion, one of said bounding portions including a chamber separated from said recess which receives and houses therein said sensing portion of said thermometer element, said chamber having an inlet opening thereto from the face portion of said housing opposite said one face thereof and an exit opening in communicating relation with the exterior environ-



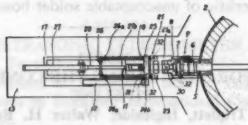
ment of said housing, and said sensing portion of said thermometer element being positioned in said chamber at a location wherein it is out of a direct alignment with said inlet opening to said chamber, the arrangement providing for ambient air to move to and through said chamber in a manner to subject said sensing portion of said thermometer element to the actual temperature thereof while said sensing portion is positioned in a relatively sheltered relation within said housing which inhibits the impingement thereon of direct or reflected rays of the sun which would adversely affect or preclude an accurate readout as to the temperature of the ambient air.

4,218,918

DEVICE FOR SAMPLING GASES IN BLAST FURNACE

Masayuki Ueno, Yokohama; Makoto Sagae, Tokyo, and Fumiaki Sano, Yokohama, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 30, 1978, Ser. No. 955,535
Claims priority, application Japan, Nov. 18, 1977, 52-138724
Int. Cl.[3] G01N *1/22*
U.S. Cl. 73—421.5 R **5 Claims**



1. Apparatus for sampling gases in a blast furnace one wall of which contains an access opening, comprising

(a) a generally horizontal fixed guide frame (**17**) adapted for mounting on the blast furnace wall adjacent the opening;

(b) probe means (**10**) for determining a condition of the blast furnace gases;

(c) bracket means (**18**) connecting said probe means with said guide frame for axial displacement relative to the opening between a fully-inserted measuring position (a), a partially withdrawn retracted position (b), and a fully withdrawn maintenance position (c); and (d) drive means for operating said bracket means, said drive means including

(1) a single piston-cylinder motor (**27**) connected with said guide frame in parallel spaced relation relative to the axis of said probe means; and

(2) coupling means for connecting the rod (**28**) of said motor with said bracket means, said coupling means including

(a) carriage means (**21***a*) slidably connected with said guide frame for displacement in a direction parallel with the axis of said probe;

(b) a coupling frame (**21***b*) slidably connected with said guide frame and connected with said carriage means for displacement in a direction parallel with the axis of said probe, said coupling frame and said carriage means being arranged on opposite sides of said bracket means; and

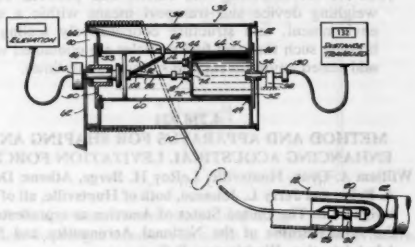
(c) means (**24***a*, **24***b*, **25**) selectively connecting said bracket means with longitudinally spaced portions of said coupling frame, respectively, whereby owing to the laterally offset relation of said drive means relative to said probe means, buckling of said probe means and the drive means is avoided.

4,218,919

APPARATUS FOR MEASURING ELEVATION

Donald K. Stephenson, N76 W22166 Cherry Hill Rd., Sussex, Wis. 53089, and Douglas J. Stephenson, 3525 Paradise La., Brookfield, Wis. 53005

Filed Sep. 8, 1978, Ser. No. 940,750
Int. Cl.[2] G01C *5/00*
U.S. Cl. 73—432 HA **16 Claims**



1. Apparatus for measuring the slope of a pipeline, said apparatus comprising an elongated conduit adapted to be filled with liquid and having opposite ends,

a first pressure sensing transducer connected to one of said ends of said conduit for measuring the fluid pressure in said one of said ends and including means for producing a first pressure indicative electrical signal,

a second pressure sensing transducer connected to the other of said ends of said conduit for measuring the pressure of fluid in said conduit at said other end and including means for producing a second pressure indicative electrical signal,

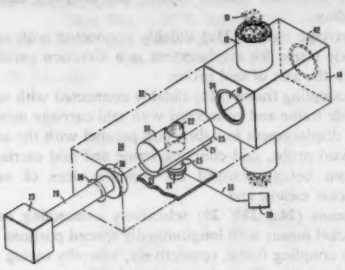
means for pulling said second pressure sensing transducer and said other of said ends of said conduit through said pipeline, and

means for processing said electrical signals of said pressure sensing transducers to determine incremental changes in elevation of said pipeline as said second pressure sensing transducer is pulled through said pipeline.

4,218,920
NUCLEAR FUEL PARTICLE BULK DENSITY DETERMINATION

Clarence D. John, Jr., Verona, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 5, 1979, Ser. No. 9,560
Int. Cl.[2] G01N *9/02*
U.S. Cl. 73—422 **7 Claims**



1. Apparatus for determining the bulk density of radioactive nuclear fuel particles flowing downwardly through a housing, comprising:

a carrier having a portion of known weight, said portion having a channel of known volume;

a cell for weighing said portion and the contents of said channel;

means for transporting said carrier between said weigh cell and housing, said means reciprocatingly moving said device between a first position wherein said channel is exposed to said flowing particles within said housing and a second position wherein said portion is in a cooperative position with said weigh cell;

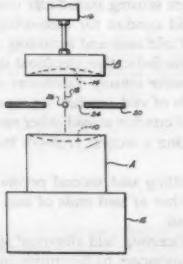
means for selectively dumping said particles contained within said channel; and

structure for enclosing said carrier and portions of said weighing device and transport means within a sealed environment, said structure cooperatively sealing said housing such that said fuel particles are contained within said sealed environment and housing at all times.

4,218,921
METHOD AND APPARATUS FOR SHAPING AND ENHANCING ACOUSTICAL LEVITATION FORCES

William A. Oran, Huntsville; LeRoy H. Berge, Athens; Donald A. Reiss, and Jerry L. Johnson, both of Huntsville, all of Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 13, 1979, Ser. No. 57,466
Int. Cl.[3] F16C *32/00*
U.S. Cl. 73—505 **13 Claims**



1. Apparatus for enhancing and shaping acoustical levitation forces in an acoustic resonance system in which a specimen of material may be suspended in a fluid medium, said apparatus comprising:

an acoustical driver element;

a concavely curved surface formed at an end of said driver element;

an acoustical reflector element spaced above said driver element;

a concavely curved reflector surface formed at an end of said reflector element faced opposing said concavely curved surface of said driving element; and

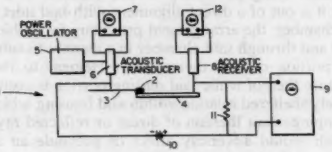
drive means operatively connected to said acoustical driver element for generating a high frequency radiation pressure field in which an enhanced, shaped levitation force is produced between said curved surfaces of said driver and reflector elements;

whereby heavier materials and liquid substances may be levitated and better contained.

4,218,922
ACOUSTIC INSPECTION OF SOLDER JOINTS

Dale Ensminger, Columbus, Ohio, assignor to Battelle Development Corporation, Columbus, Ohio

Filed Sep. 18, 1978, Ser. No. 943,447
Int. Cl.[3] G01N *29/04*
U.S. Cl. 73—588 **3 Claims**



1. A method for qualitatively inspecting the integrity of a solder bond joining a lead wire and a conductor which comprises

(A) applying an acoustic wave to the solder joint,

(B) applying a known current to the lead wire such that the current is carried through the solder bond to the conductor,

(C) receiving from the conductor the current as modulated by conditions in the acoustically stimulated solder bond, and

(D) comparing the modulated current received from the conductor to the applied current in the lead wire whereby to detect the modulations of the applied current which are characteristic of unacceptable solder bonds.

4,218,923
SYSTEM FOR MONITORING THE CONDITION OF A PIPELINE

William C. Triplett, Ingleside; Walter H. Brauer, Houston; Robert Burke, Corpus Christi, and Richard Morrow, Mission, all of Tex., assignors to Triad & Associates, Inc., Robstown, Tex.

Continuation-in-part of Ser. No. 866,486, Jan. 3, 1978, Pat. No. 4,162,635. This application Feb. 7, 1979, Ser. No. 10,032
Int. Cl.[3] G01N *29/04*
U.S. Cl. 73—623 **2 Claims**

1. Apparatus for scanning the interior of a pipeline having a radius R, comprising:

A. an elongated body member having a longitudinal axis, having a power supply disposed therein,

B. bogie assembly including means for maintaining the longitudinal axis of said body member substantially coaxial with the central axis of said pipeline,

C. sealing means extending radially from said body member,

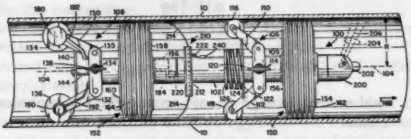
and including means for establishing a fluid-tight seal between regions in a pipeline ahead of said apparatus and regions behind said apparatus, whereby said apparatus is responsive to the pressure differential across said sealing means to move at a velocity V along said pipeline axis from regions of relatively high pressure to regions of relatively low pressure,

D. sensor means powered by said power supply for detecting one or more physical characteristics of portions of said pipeline adjacent to said apparatus, and for generating sensor data signals representative of said conditions, said sensor means including:

coupling means including a flexible membrane for containing a liquid phase medium in a toroidal region between said body member and a portion of the interior surface of said pipeline adjacent to said apparatus, and

an ultrasonic surface wave transponder including:

i. means for transmitting an ultrasonic surface wave excitation beam within said toroidal region of said coupling means at an angle θ with respect to said



pipeline axis, where θ is measured from said pipeline axis ahead of said body member and is less than $\pi/2$ radians, and for receiving an oppositely directed wave disturbance, said transmitted beam being adapted to pass through said toroidal region and said flexible membrane and excite ultrasonic waves on the interior surface of said pipeline, and having a beam width at least equal to L in the direction of said pipeline axis at a distance R from said axis, and a beam width Δ which is small compared with $2\pi R$ in the direction transverse to said axis at a distance R from said axis,

ii. means for rotating said transmitting and receiving means at an angular velocity equal to $2\pi V/L$ radians per second, and

iii. means for generating an ultrasonic surface wave sensor data signal representative of said received wave disturbance, said surface wave sensor data signal being representative of the interior surface condition of said pipeline at the point of incidence on said pipeline of said transmitted excitation beam.

4,218,924

ULTRASONIC ELLIPSOMETER

Christopher M. Fortunko, Albuquerque, N. Mex.; Carmine F. Vasile, and Robert B. Thompson, both of Thousand Oaks, Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

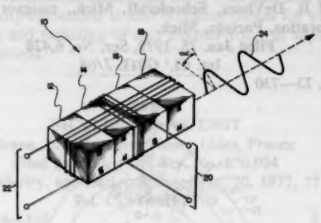
Filed Jul. 2, 1979, Ser. No. 54,394
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—642 **14 Claims**

1. An electromagnetic acoustic transducer for generating and detecting an elliptically polarized ultrasonic wave in an electrically conductive material, comprising:

a source of magnetic flux for establishing a magnetic field directed normal to a surface of said material and periodic in intensity in a direction perpendicular to said field direction;

a first conductor for inducing a first alternating current in a first current direction within said material perpendicular to said field direction and perpendicular to said periodic direction; and

a second conductor for inducing a second alternating current in a second current direction within said material



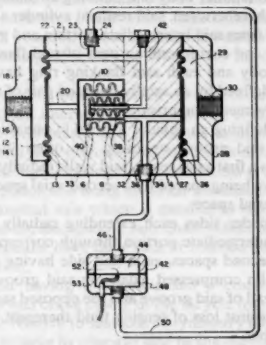
perpendicular to said field direction and parallel to said periodic direction.

4,218,925

DIFFERENTIAL PRESSURE TRANSMITTER WITH PRESSURE SENSOR PROTECTION

Robert A. DiDomizio, Jr., Lansdale, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 27, 1979, Ser. No. 52,576
Int. Cl.² G01L *13/02*
U.S. Cl. 73—706 **8 Claims**



1. A fluid pressure transmitter comprising

a first diaphragm means responsive to a first input pressure,

first incompressible fluid means in contact with said first diaphragm means,

a differential pressure responsive means,

a first fluid conduit means communicating said first fluid means to one side of said differential pressure responsive means,

a second diaphragm means responsive to a second input pressure,

a second incompressible fluid means in contact with said second diaphragm means,

a second fluid conduit means communicating said second fluid means to the other side of said differential pressure responsive means,

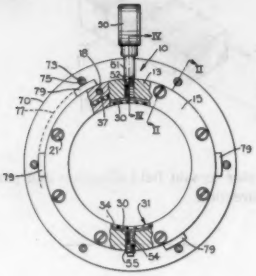
a first bellows means having an outside surface exposed to said first fluid means and an internal surface exposed to said second fluid means and

a second bellows means located within said first bellows means and having an internal surface exposed to said first fluid means and an external surface exposed to said second fluid means.

4,218,926
ISOLATING PRESSURE SENSOR

Richard B. DeVisser, Schoolcraft, Mich., assignor to Dover Corporation, Portage, Mich.

Filed Jan. 25, 1979, Ser. No. 6,428
Int. Cl.[3] G01L 7/08
U.S. Cl. 73—730 20 Claims



1. A self-contained device for disposition within a fluid line to sense the pressure of fluid in the passage of the fluid line, said device including an annular body and two flanking rings held in coaxially sandwiched relation, said body having an inside diameter greater than the inside diameter of the flanking rings, a resilient cylinder having an intermediate portion disposed within said annular body and defining an annular sensing fluid chamber therebetween, said resilient cylinder also having sides extending from said intermediate portion and gripped between said body and corresponding ones of said flanking rings, said annular body and each said flanking ring having a common interface defined by an axially opposed pair of walls, including the improvement comprising:

means defining an annular groove in one said wall of a said pair, said groove opposing the other wall of said pair across a first axial space, said walls radially inboard of said groove being spaced by a second axial space less than said first axial space;

said cylinder sides each extending radially outward from said intermediate portion through corresponding ones of said second spaces, each said side having an axially widened lip compressed axially in said groove between the end wall of said groove and the opposed said other wall to seal against loss of sensing fluid therepast from said fluid chamber.

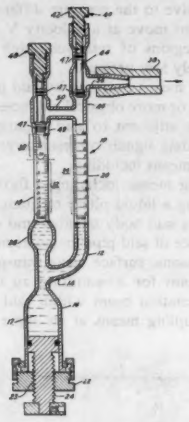
4,218,927
PRESSURE GAUGE

Roger Gilmont, Douglaston, N.Y., assignor to Gilmont Instruments, Inc., Great Neck, N.Y.

Filed Jul. 13, 1979, Ser. No. 57,400
Int. Cl.[2] G01L 21/04
U.S. Cl. 73—752 9 Claims

1. In a pressure gauge comprising a body having a first passage; a second passage; a reservoir adapted to contain a supply of liquid; first fluid communication means between one end of each of said passages and said reservoir, the other end of said first passage being adapted to be connected to a source the pressure of which is to be measured; and means for causing liquid in said reservoir to enter and leave said passages, said gauge being adapted to be used in conjunction with scale means associated with said passages for reading the levels of liquid in said passages;

the improvement comprising second fluid communication means in said body between the other ends of said passages, and means operatively connected to the other end of said second passage and movable between first and second positions, said movable means in said first position closing said other end of said second passage from said second fluid communication means and said movable means in said second position opening said other end of

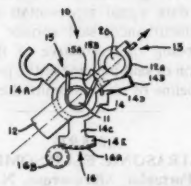


said second passage to said second fluid communication means.

4,218,928
DOUBLE ACTING DELAY MECHANISM

Arthur M. Lohmann, Hopkins, Minn., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 5, 1979, Ser. No. 1,329
Int. Cl.[3] G05G 17/00
U.S. Cl. 74—3.52 5 Claims



1. A double snap acting delay mechanism, comprising:

a. a shaft;

b. a first member pivotally mounted on said shaft and having a first end with a preselected configuration;

c. means for selectively restraining and releasing said first member at said first end;

d. a second member adjacent to said first member and pivotally mounted on said shaft, wherein said second member has: a first leg configurated complementarily to said first end of said first member; a second leg; and, a third leg;

e. means for biasing said first member to said second member, wherein this said biasing means also interconnects said first member near said first end thereof and said second member near said second leg thereof;

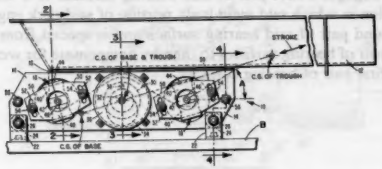
f. and, means for selectively and arcuately moving said third leg of said second member.

4,218,929

VIBRATORY DEVICE FOR FEEDERS AND THE LIKE

William V. Spurlin, Indiana, Pa., assignor to Syn-Energy, Inc., Indiana, Pa.

Filed Dec. 29, 1977, Ser. No. 858,341
Int. Cl.[2] B06B 1/16; B65G 27/20
U.S. Cl. 74—61 20 Claims



1. A vibratory device operable as a two mass vibrating system for driving a work member as used in vibratory feeders and the like comprising:

a first mass carrying a motor driven eccentric weight exciter means to produce vibratory work energy,

a second mass having a work member forming a part of said second mass;

vibration transmitting spring means coupling said masses to transmit said vibratory work energy from said first mass to said second mass, said spring means capable of deflection substantially only in a single direction to apply the exciter forces to said second mass substantially only in said direction, and angularly adjustable relative to both of said masses independently of said exciter means to permit variation in the direction of application of the exciter forces as conditions of use dictage, and

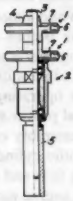
isolator springs supporting said masses and spring means to eliminate transmitting vibration into the structure supporting the vibratory device.

4,218,930

FALSE TWIST SPINDLE FRICTION DISC AND METHOD OF PRODUCING SAME

Akinori Naito; Masao Shimizu; Masatsugu Mori, and Yukihiro Matsubara, all of Iwata, Japan, assignors to NTN Toyo Bearing Co., Ltd., Osaka, Japan

Filed Dec. 1, 1977, Ser. No. 856,682
Claims priority, application Japan, Jun. 9, 1977, 52/68444; Sep. 5, 1977, 52/107093
Int. Cl.[2] F16H 55/34
U.S. Cl. 74—216 9 Claims



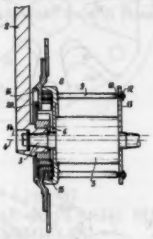
1. A false twist spindle friction disc adapted for use at super high rotational speeds in the range of from 800,000–1,200,000 revolutions per minute, comprising a rigid annular rotor member having an outer periphery and lateral surfaces, said lateral surfaces are machined in advance to form predetermined coupling means, a support base of synthetic resin having a hub portion and a disc portion utilizing said annular rotor as a core while leaving the outer periphery of said rotor member exposed and projecting beyond said support base, wherein said rotor member and support base form a unitized member which is rigid and resistant to centrifugal force with said disc portion being partially embedded in said coupling means for preventing bulging and pulsating of said annular rotor at super high rotational speeds.

4,218,931

BICYCLE CRANK UNIT

Claude Tritenne, Les Morenes, Thoiry (Ain), France

Filed Jan. 17, 1978, Ser. No. 870,094
Claims priority, application France, Jan. 20, 1977, 77 02218
Int. Cl.[2] F16H 9/00
U.S. Cl. 474—165 2 Claims



1. In a bicycle crank unit comprising a crank spindle, two diametrically opposed pedal cranks, one mounted on each end of said crank spindle and chain wheel means driven by said crank spindle and rotatable about a horizontal axis of symmetry of a crank casing of a bicycle frame, the improvement wherein:

an externally toothed pinion is fixed on the rotatable crank spindle, and, an internally toothed wheel is fastened to said chain wheel means and positioned in meashing engagement with said externally toothed pinion, said internally toothed wheel having a number of teeth greater than that of said pinion and being mounted for rotation relative to said horizontal axis which is parallel to but different from that of the said pinion, said chain wheel means and said crank spindle have their axes of rotation parallel but non-coincident;

a circular dish having a concave and a convex side is mounted on said crank casing of the bicycle frame so as to be eccentric relative to said axis of symmetry of the crank casing and to have its concave side facing outwards away from the crank casing;

a side-plate is associated with said concave side;

a ball bearing is disposed between said side-plate and said concave side of said dish thereby mounting said dish rotatably on said side-plate; said side-plate having an internally toothed portion forming said internally toothed wheel, tie rods having screw-threaded free ends are provided, said tie rods being fixed on the convex side of said dish;

nuts are threaded on said free ends of said tie rods and a back-plate abuts the other side of the crank casing, said free ends of said tie rods extending through said backplate-for thereby fixing said dish onto said crank casing.

4,218,932

BELT SPROCKET WHEEL

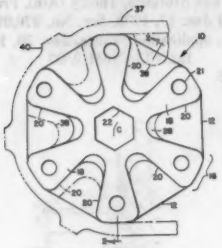
Donald R. McComber, Littleton, Colo., assignor to The Gates Rubber Company, Denver, Colo.

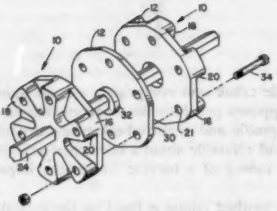
Continuation of Ser. No. 641,105, Dec. 15, 1975, abandoned. This application Apr. 29, 1977, Ser. No. 792,158
Int. Cl.[3] F16H 55/30; B62D 55/08
U.S. Cl. 474—161 10 Claims

10. In a sprocket wheel for a toothed belt having two rows of belt teeth, the sprocket wheel having an axis, generally

oppcsitely axially facing imperforate sides, a hub, a rim, and axially oriented sprocket teeth extending in alignment from each imperforate side, the improvement comprising:

a generally polygonal rim portion with substantially equilateral peripheral sides that are successively interconnected with arcuate secondary rim portions, the sprocket teeth extending from the secondary rim portions and having





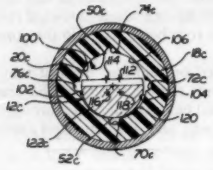
generally radial sides that are substantially flat and extend from the secondary rim portions to a tapered hub to define generally axially extending surfaces coextensive of the radial sides wherein the sides of successive sprocket teeth, the imperforate sides of the wheel, and the tapered hub defines a belt tooth receiving cavity for engaging a belt tooth and directing foreign debris from the sprocket when in use.

4,218,933

RACK AND PINION GEAR ASSEMBLY

David H. Allen, Avon, England; Peter R. Rogers, West Glamorgan, and John Whitney, Mid Glamorgan, both of Wales, assignors to Cam Gears Limited, Hertfordshire, England

Filed Oct. 10, 1978, Ser. No. 949,814
Int. Cl.[2] F16H *1/04*; B62D *1/20*
U.S. Cl. 74—422 **19 Claims**



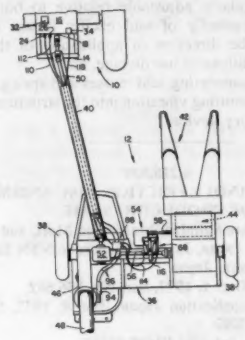
15. A rack and pinion steering gear assembly comprising a housing, a pinion gear rotatably mounted in said housing, a rack at least partially disposed in said housing in meshing engagement with said pinion gear, said rack having a longitudinally extending array of teeth and a longitudinally extending main body portion having a cross section which is at least partially defined by a circle, tubular bushing means for urging the teeth on said rack into meshing engagement with said pinion, said tubular bushing means including a circular array of arcuate bearing surfaces circumscribing said rack, said circular array of arcuate bearing surfaces having a diameter which is greater than the diameter of the circle which at least partially defines the cross section of the rack, and means for enabling said bushing means to be selectively rotated around said rack from a first position in which said main body portion of said rack engages a first pair of said bearing surfaces to a second position in which said main body portion of said rack engages a second pair of said bearing surface and is spaced from said first pair of bearing surfaces to thereby compensate for wear of said first pair of bearing surfaces.

4,218,934

POWER TRANSMISSION CONTROL FOR A PULL-TYPE IMPLEMENT

Donald W. Demorest, Ottumwa, Iowa, and Marlan J. Rolfes, Wynot, Nebr., assignors to Deere & Company, Moline, Ill.

Filed Jul. 5, 1978, Ser. No. 922,030
Int. Cl.[2] G05G *9/16*
U.S. Cl. 74—473 R **7 Claims**



1. In a mobile harvesting machine having a power transmission assembly for a functional element of the machine having a plurality of output modes and a mechanically operated control member for selecting the output mode, shiftable between a plurality of discrete settings, each setting corresponding to one of the output modes, and a hydraulic power source for delivering hydraulic fluid at an operating pressure and a hydraulic reservoir and an electrical power source, a control system for the power transmission assembly comprising:

first and second hydraulic cylinders;

a control valve having first and second inlets connected to the hydraulic power source and the reservoir respectively and first and second outlets connected to the first and second hydraulic cylinders respectively and a control element movable to a plurality of positions so that the first inlet may be selectively connected to any one of the outlets and including a neutral position and means for moving the control element; and

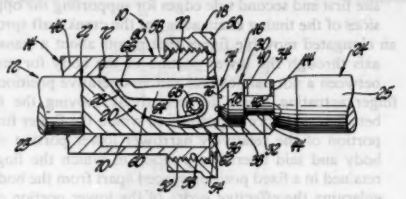
mechanical means for connecting the hydraulic cylinders to the control member of the power transmission assembly so that for a given operating pressure, the respective first and second hydraulic cylinders are selectively operable to apply equal but opposite forces to the control member.

4,218,935

RECONNECT INTERLOCK

John C. Ion, Doylestown; George M. Zieber, Jr., King of Prussia, and Stanley L. Loewenstern, Philadelphia, all of Pa., assignors to Teleflex Incorporated, Limerick, Pa.

Filed Feb. 22, 1978, Ser. No. 880,291
Int. Cl.[2] F16C 1/10
U.S. Cl. 74—501 R 21 Claims



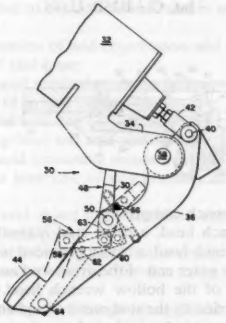
1. A motion transmitting remote control assembly of the type for transmitting longitudinal movement along a curved path and comprising; a flexible motion transmitting means for transmission of motion and having detachable connection means for allowing connected and disconnected positions, outer casing means for slidably receiving said motion transmitting means and having detachable attachment means for allowing attached and unattached positions, and control means having an operable position for permitting said outer casing means to be moved to said attached position only when said motion transmitting means is in said connected position and an inoperable position for preventing said outer casing means from being moved to said attached position when said motion transmitting means is in said unconnected position.

4,218,936

LOCK MECHANISM FOR SERVICE BRAKE

Van E. Waggoner, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jun. 21, 1978, Ser. No. 917,499
Int. Cl.[2] G05G 1/14, 5/06
U.S. Cl. 74—512 1 Claim



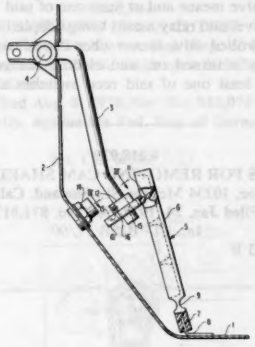
1. A combined service and park brake arrangement, comprising: a support; a pedal arm pivotally mounted on the support for movement about a first axis between brake-release and brake-engage positions; biasing means mounted between the support and arm and urging the latter toward its brake-release position; a locking pawl pivotally mounted on the arm for movement about a second axis, extending parallel to the first, between an arm lock position, wherein it engages the support and prevents movement of the arm from its brake-engage position, and an unactuated position wherein it permits free movement of the arm between the brake-release and brake-engage positions; linkage means mounted solely on the arm and being pivotally connected between the arm and pawl and selectively operable to move the pawl between its arm lock and unactuated positions; said pedal arm including an integral foot pad facing in a first direction for engagement by an operator's foot; said linkage means including a first link having a first end pivotally connected to the pawl, a second link having a first end pivotally connected to the pedal arm adjacent said foot pad and the first and second links being of such length and having respective second ends pivotally interconnected to each other to form a knee joint which is displaced from the pad in a second direction 90° from the first direction and is elevated from the pedal arm in said first direction when the pawl is in its arm release position and is depressable to a position alongside the pedal arm to move the pawl to its arm lock position; and a pawl return spring connected between the pawl and the pedal arm and biasing the pawl toward its arm release position.

4,218,937

MULTIPARTITE PEDAL OF PLASTIC MATERIAL FOR VEHICLES

Wilhelm Albrecht, Vaihingen-Enz; Bernd Riemer, and Anton Allert, both of Stuttgart, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 23, 1978, Ser. No. 918,501
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1977, 2728787; Apr. 12, 1978, 2815769
Int. Cl.[2] G05G 1/14; F16C 11/00
U.S. Cl. 74—513 13 Claims



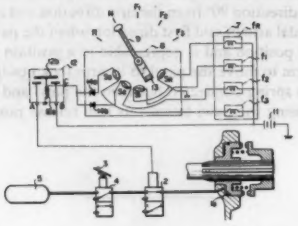
1. A multipartite drive pedal arrangement of synthetic plastic material for a vehicle comprising a foot plate connected to fastening members by flexible film hinges, a first of said fastening members being located at a lower end of the foot plate and secured to a wall portion of the vehicle, and a second of the fastening members being located at an upper rear side portion of the foot plate and secured to a pivotally mounted lever within a leg space of a passenger compartment of the vehicle, said second fastening member having a bore extending therethrough in a direction extending approximately transversely to a direction corresponding to a line about which the hinge between the second fastening member and foot plate flexes, and clamping means for fixing said second fastening member at a plurality of axially spaced positions along a linear end portion of the lever, said clamping means being connected to said second fastening means by a further flexible film hinge.

4,218,938

CONTROL SYSTEM FOR A DIFFERENTIAL GEAR LOCK MECHANISM

Masaharu Hattori, Tokyo, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Jul. 27, 1978, Ser. No. 928,377
Claims priority, application Japan, Jul. 25, 1977, 52/98276[U]
Int. Cl.² F16H *1/44*
U.S. Cl. 74—710.5 **3 Claims**



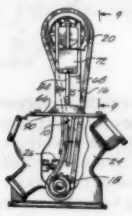
1. A control system for a differential gear lock mechanism including power transmission means having at least two forward drives and a backward drive and a manually operable speed change lever associated with said power transmission means, said control system comprising differential gear means, an air tank containing compressed air therein, conduit means for connecting said air tank with said differential gear means, valve means disposed in said conduit means for selectively supplying compressed air to said differential gear means when actuated, solenoid-controlled valve means disposed in said conduit means for interrupting air supply to said differential gear means when actuated, a plurality of reed switches each being adapted to be turned on in response to the shifting of the speed change lever, relay means connected to said solenoid-controlled valve means and at least one of said reed switches for higher drive, said relay means being adapted to actuate said solenoid-controlled valve means when one of said higher drive reed switches is turned on, and electric source means connected to at least one of said reed switches and said relay means.

4,218,939

APPARATUS FOR REMOVING CAM SHAFT SPROCKET

John H. Castoe, 10234 McVine St., Sunland, Calif. 91040

Filed Jan. 24, 1978, Ser. No. 871,817
Int. Cl.² B25B *27/00*
U.S. Cl. 81—3 R **26 Claims**



1. For use in an overhead cam engine having an upper cam shaft sprocket, a lower crankshaft sprocket below the cam shaft sprocket, an endless timing chain engaged with both sprockets, opposite sides of the chain having a space between them that tapers narrower from the cam shaft sprocket toward the crankshaft sprocket, and a chain tensioner urged against a portion of the timing chain adjacent the crankshaft sprocket; a tool for holding the timing chain on the lower crankshaft sprocket when the upper cam shaft sprocket is removed, the tool comprising:

an elongated rigid body having a width which tapers narrower along the length of the body from a relatively wider upper portion toward a relatively narrower lower portion of the body for allowing the body to be inserted into the tapered space between opposite sides of the timing chain adjacent the crankshaft sprocket, the body having opposite first and second side edges for supporting the opposite sides of the timing chain adjacent the crankshaft sprocket;

an elongated movable finger that pivots about a transverse axis through the lower portion of the body for moving between a normal position and an operative position; and

finger actuating means for selectively moving the finger between said normal position in which the finger forms a portion of the relatively narrower lower portion of the body and said operative position in which the finger is retained in a fixed position spaced apart from the body for enlarging the effective width of the lower portion of the body for permitting the lower portion of the body to be inserted into the tapered space between the opposite sides of the timing chain when the finger is in its normal position, so that the finger can be thereafter actuated to move to its operative position and be retained in such a position to apply pressure against the normal bias of the chain tensioner, the finger having an outer edge of sufficient width to support the chain on the chain tensioner when said pressure is applied;

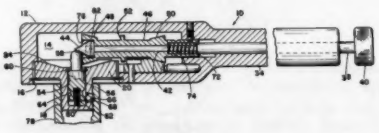
the finger actuating means including an adjustment member movable for positioning the finger in a selected position between the normal position and the operative position, and adjustment means for being adjusted adjacent the upper portion of the body for moving the adjustment member to position the finger in said selected position, including means for holding the adjustment member in a fixed position for retaining the finger in said selected position.

4,218,940

SOCKET RELEASE APPARATUS

Doug Main, Denver, Colo., assignor to Harvey M. Main, a part interest, Denver, Colo.

Filed Dec. 6, 1978, Ser. No. 966,810
Int. Cl.² B25B *13/46*
U.S. Cl. 81—63 **8 Claims**



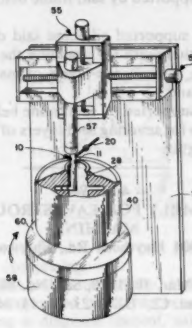
1. A socket wrench comprising;

a hollow wrench head, a drive stud extending outwardly from the wrench head, a cavity provided in the drive stud closed to the outer end of the drive stud and opening into the interior of the hollow wrench head, a detent ball movably carried by the stud member and engageable with a socket carryable by said stud member, means carried within the stud cavity for selectively engaging and disengaging the detent ball, an elongated handle carried by the wrench head and extending outwardly therefrom at a right angle to the stud member, a longitudinal bore provided through the handle, a shaft movable within the bore, means at the outer end of the shaft exterior of the outer end of the handle for moving such shaft and means carried by the inner end of the shaft operably engageable with the means for selectively engaging and disengaging the detent ball, whereby movement of the shaft to a first position engages the detent ball and movement to a second position disengages the detent ball.

4,218,941
METHOD AND TOOL FOR MACHINING A TRANSVERSE SLOT ABOUT A BORE

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Manuel A. David-Malig, Morgan Hill, Calif.

Filed Oct. 17, 1978, Ser. No. 953,314
Int. Cl.³ B23B *3/00, 35/00, 41/00*
U.S. Cl. 82—1 C **7 Claims**



1. A method for machining a transverse slot of first dimension through a bore of second dimension being smaller than said first dimension comprising the steps of:

(a) providing an object to be machined having a bore of said second dimension;

(b) providing a cutting tool having a cutting head and being insertable into said bore of said second dimension;

(c) providing a tensioning means for urging said cutting head toward said tool;

(d) providing a plurality of spacers insertable between said cutting head and said cutting tool;

(e) applying said tensioning means to affix said head to said tool;

(f) positioning said cutting tool in said bore;

(g) rotating said object to be machined about the longitudinal axis of said bore;

(h) moving said cutting head transversely into said object being rotated to cut a transverse slot in said object about said bore;

(i) ceasing rotation of said object upon said shaft contacting the wall of said bore;

(j) releasing said tensioning means and moving said cutting tool away from said cutting head;

(k) inserting at least one of said plurality of spacers between said cutting head and said cutting tool;

(l) applying said tensioning means to affix said cutting head and said at least one of said plurality of spacers to said tool;

(m) rotating said object to be machined about the longitudinal axis of said bore;

(n) moving said cutting head transversely into said object being rotated to deepen the slot being cut transversely about said bore; and

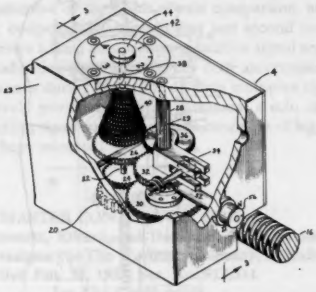
(o) repeating steps (i) through (n) until said slot is cut to said first dimension.

4,218,942
INCH/METRIC THREAD DIAL

Dana F. Buccicone, Battle Creek, Mich., assignor to South Bend Lathe, South Bend, Ind.

Filed May 9, 1979, Ser. No. 37,433
Int. Cl.³ B23B *21/00, 1/00*
U.S. Cl. 82—22 **10 Claims**

1. In combination with a lathe having a moveable carriage, a lead screw, and nut means borne by the carriage and engageable with the lead screw for motivating the carriage, a thread dial for said carriage comprising a housing, a worm wheel engaging said lead screw, a first shaft drivingly attached to said worm wheel and journaled for rotation in said housing, a second shaft journaled for rotation in said housing, an indicator dial having indicator marks thereon and journaled for rotation with said second shaft, gear train means for connecting said

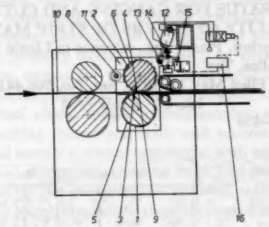


first shaft with said second shaft and providing a multiplicity of selectively engageable gear ratios, gear shifting means for connecting said first and second shafts through any one of the said gear ratios, a reference mark proximate to said indicator dial whereby said indicator marks may be positioned with respect to said reference mark.

4,218,943
REVOLVING CROSS CUTTER

Dieter Osburg, Neuss-Weckhoven, Fed. Rep. of Germany, assignor to Jagenberg Werke Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Aug. 8, 1978, Ser. No. 932,072
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1977, 2743561
Int. Cl.² B26D *7/22*
U.S. Cl. 83—304 **5 Claims**



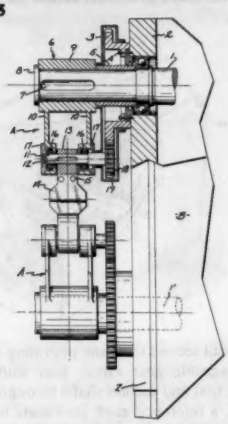
1. A revolving cross cutter having two knife drums coupled together, means mounting the upper knife drum for movement towards and away from the lower drum for setting a desired gap between the two and sensor-controlled lift means for maintaining the upper drum at the desired spacing from the lower drum and responsive to forces tending to lift the upper knife drum away from the lower drum to immediately automatically lift the upper drum away from the lower drum to a distance sufficient to remove the action of the forces on the upper drum.

4,218,944

ROTARY KNIVES SHEAR MACHINE

Ferruccio Sclippa, Via Matteotti n.57, Tricesimo (UD), Italy (33019)

Filed Mar. 27, 1978, Ser. No. 890,072
Int. Cl.[2] B23D *25/08*
U.S. Cl. 83—345 **6 Claims**



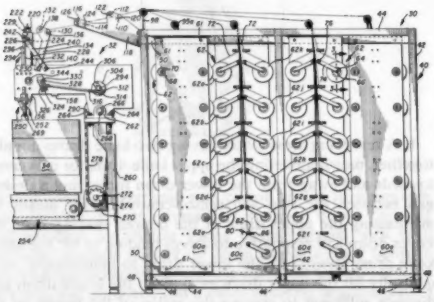
1. A shear machine for cutting a bar including at least one pair of principal parallel shafts, which rotate at the same rate in opposite directions, comprising a principal gear fixedly and coaxially mounted about each of said principal shafts; an arm keyed to each of the said principal shafts to rotate therewith; a secondary shaft supported on said arm; a knife attached to said secondary shaft; a secondary gear attached to said secondary shaft and in planetary geared coupling with said principal gear; whereby the rotation of the principal shaft and of the respective arm, the secondary gear rotates, about the principal gear and carries said knife with it by means of said secondary shaft, the cutting motion of said knife being along an epicycloidal trajectory.

4,218,945

APPARATUS FOR GANGING AND CUTTING A PLURALITY OF LAYERS OF STRIP MATERIAL

Roger C. Sharlow, Plano, Tex., assignor to Liquid Paper Corporation, Dallas, Tex.

Filed May 17, 1978, Ser. No. 906,441
Int. Cl.[2] B26D *7/06*
U.S. Cl. 83—436 **32 Claims**



1. An apparatus for ganging and cutting multiple rows of a plurality of layers of strip material in predetermined lengths, comprising:

a frame,

a guide plate means supported by said frame and having a plurality of channels corresponding to said plurality of layers of strip material for receiving the rows of layered strip material therein and preventing the lateral movement of the plurality of layers of material,

a drive roller supported by said frame below said guide plate means,

a driven roller supported adjacent said drive roller and in engagement therewith for grabbing the layers of material therebetween to draw the layers of material beyond said drive roller, and

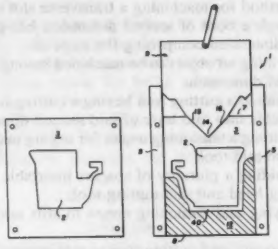
a cutter means supported by said frame below said drive and driven rollers for severing said layers of material in predetermined lengths.

4,218,946

CUTTER ASSEMBLY FOR EAVESTROUGH-FORMING MACHINE

Horst Witzler, 1004 Haythorn Rd., Sherwood Park, Alberta, Canada

Filed Mar. 10, 1978, Ser. No. 885,395
Int. Cl.[3] B23D *23/00, 15/04*
U.S. Cl. 83—636 **4 Claims**



1. A cutter assembly for an eavestrough-forming machine, said assembly comprising:

a pair of support plates, each plate forming an aperture having a shape matching that of an eavestrough formed by the machine, said apertures being aligned in spaced relationship so that such eavestrough may extend therethrough and be supported by said plates;

means for spacing the support plates apart, said spacing means cooperating with the support plates to form a channel having a bottom opening spaced below the apertures for the discharge of cut-outs, said spacing means forming a guillotine path extending across the apertures toward the bottom opening;

a guillotine positioned between the plates and adapted to be moved along the path to remove cut-outs from an eavestrough extending through the apertures, said guillotine having a generally V-shaped blade providing first and second inclined cutting edges for severing the eavestrough;

at least one of the support plates being undercut from immediately below its aperture to the bottom opening so that the cut-outs removed by the guillotine may drop freely through said opening without significant frictional contact with the plates;

said guillotine having a radius formed in the upper end portion of each cutting edge for forming the upper end of the cut-out removed by the relevant cutting edge into a compact configuration so that the length of the cut-out is less than its fully extended straight length, whereby the upper end of said cut-out is not in frictional contact with the spacing means; and

said V-shaped blade having a second more steeply inclined portion along each cutting edge, the second inclined por-

tion being connected at its top edge to said radius formed in the upper end portion of each cutting edge.

4,218,947

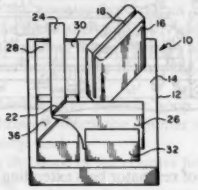
MITRE BOX

Joseph Laviola, 1859 Bellemore Ave., Deptford, N.J. 08096

Filed Mar. 23, 1979, Ser. No. 23,155

Int. Cl.[2] B27G *5/02*

U.S. Cl. 83—762 **5 Claims**



1. A miter box comprising:

a substantially flat and rectangularly shaped base member;

a first saw guide mounted on the upper surface of said base member along a diagonal thereof, said first saw guide being adapted to guide a saw along said diagonal;

a second saw guide spaced from said first saw guide but being in alignment therewith along said diagonal, said second saw guide being positioned above the upper surface of said base member, an opening remaining beneath said second saw guide and between the same and said base member for allowing the material being mitered to pass therethrough, and

means adjacent at least one edge of said base for supporting said material being mitered.

4,218,948

ELECTRONIC MUSICAL INSTRUMENT OF KEY CODE PROCESSING TYPE

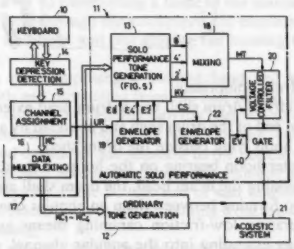
Akira Nakada; Eiichiro Aoki; Akiyoshi Oya; Takatoshi Okumura; Yasuji Uchiyama, and Eiichi Yamaga, all of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Dec. 21, 1978, Ser. No. 972,031

Claims priority, application Japan, Dec. 27, 1977, 52-158217

Int. Cl.[2] G10H *1/00, 5/00*

U.S. Cl. 84—1.01 **12 Claims**



1. A solo performance system for a keyboard electronic musical instrument of the type in which digital key codes representing operated keys are repetitively supplied in time division multiplex fashion to a tone generator, the numerical values of said key codes being ordered in accordance with the tone pitches of the notes selected by operation of the corresponding keys, a portion of each key code indicating the depressed or released state of the corresponding key, said system comprising:

first means for ascertaining, during each time division multiplex cycle, which of the supplied key codes has the highest (or lowest) numerical value pitch, and for making available said ascertained key code for use by a tone generator in said instrument,

second means, cooperating with said first means, for comparing said key code ascertained by said first means during the current time division multiplex cycle with the key code ascertained during the prior cycle and for producing a signal indicative of the result of said comparison, and

logic means, cooperating with said first and second means and responsive to said comparison-indicative signal and to the state-indicating portion of the key code ascertained by said first means during each time division multiplex cycle, for selectively providing to said instrument a solo effect tone switching signal indicating that a new note of highest pitch has been selected.

4,218,949

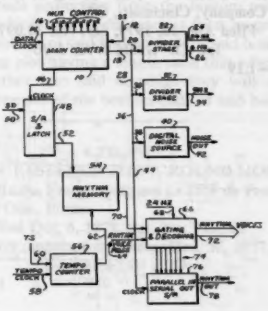
MASTER CONTROL LSI CHIP

Harold O. Schwartz, Elburn, and Dennis E. Kidd, Sycamore, both of Ill., assignors to The Wurlitzer Company, DeKalb, Ill.

Filed Jun. 20, 1978, Ser. No. 917,311

Int. Cl.[2] G10H *1/02*

U.S. Cl. 84—1.03 **15 Claims**



1. In an electronic organ or the like having a plurality of switches and manually engagable means for operating said switches, multiplexing means operable in conjunction with said switches to provide serial data as to the condition of said switches, a data clock, and a large scale integrated circuit control chip comprising a first counter operated by said data clock, said counter providing drive signals for said multiplexing means, a memory having a plurality of rhythm patterns stored therein, means for receiving said serial data and for selectively latching said data, a second counter operated by a second external clock, means interconnecting said memory with said latching means and with said second counter for accessing said memory, means connected with said data clock for gating the information accessed from said memory out of said chip, and further means connected with said first counter for separately gating the information accessed from said memory out of said chip.

9. A large scale integrated circuit chip comprising means for receiving serial data from an external multiplexing means and for converting it to parallel data, means for latching said parallel data at predetermined times, a main counter adapted to receive input from a data clock, said main counter having output means for driving said external multiplexing means, a memory having a plurality of rhythm patterns stored therein, a second counter having means for receiving a clock input for operating said second counter, means interconnecting said rhythm memory with said latch and with said second counter for accessing said memory, means interconnecting said main counter and said latch for latching information at predeter-

mined times determined by said main counter, and means for decoding the information from said memory and for gating the decoded information from said chip.

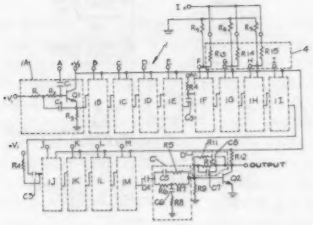
13. In an electronic organ or the like having a plurality of switches and manually engagable means for operating said switches, multiplexing means operable in conjunction with said switches to provide serial data as to the condition of said switches, a data clock, a tempo clock, and a plurality of large scale integrated circuit chips each comprising a first counter operated by said data clock, said first counter of at least one of said chips providing drive signals for said multiplexing means, a memory having a plurality of rhythm patterns stored therein, means for receiving said serial data and for selectively latching said data, a second counter operated by said tempo clock, means interconnecting said memory with said latching means and with said second counter for accessing said memory, means for gating the information accessed from said memory out of each said chip, and external means interconnecting said chips for conjoint operation thereof, said interconnecting means including means for synchronizing the operation of said chips.

4,218,950

ACTIVE LADDER FILTER FOR VOICING ELECTRONIC MUSICAL INSTRUMENTS

Dale M. Uetrecht, Cincinnati, Ohio, assignor to Baldwin Piano & Organ Company, Cincinnati, Ohio

Filed Apr. 25, 1979, Ser. No. 33,097
Int. Cl.³ G10H *1/12, 1/16*
U.S. Cl. 84—1.19 **6 Claims**



1. A multiple input active ladder filter for voicing electronic musical instruments having one or more signal sources producing output signals of predetermined frequency, amplitude and phase, said filter comprising a plurality of cascaded active filter stages, each stage having a first input, a second input, and an output, said first input being connected to said output of a preceeding filter stage, each of said stages having a predetermined bandwidth and center frequency, and a resistor matrix for coupling the outputs of selected tone sources to selected second inputs of said filter stages, said matrix comprising a plurality of resistors, individual ones of said resistors connecting the output of a selected signal source with a plurality of selected second filter stage inputs, said stages operating to combine signals introduced at said second inputs.

4,218,951

STRINGED INSTRUMENT

Willard Tressel, 667 Cragmont Ave., Berkeley, Calif. 94708

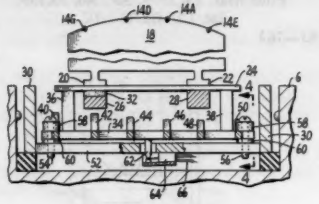
Filed Jun. 1, 1979, Ser. No. 44,506
Int. Cl.² G10D *3/02*
U.S. Cl. 84—294 **5 Claims**

1. A stringed instrument wherein said instrument has the usual configuration including a plurality of strings held in tension over a bridge, said strings being adapted to be struck, plucked or bowed, comprising in combination:

a. a small plate supporting a bridge, said bridge having a pair of feet resting on said plate;

b. a pair of longitudinal bars placed under said plate substantially under said feet, said longitudinal bars being connected to a frame member on the instrument to support said plate and said bridge;

c. a transverse resonator support bar mounted under said plate and said bridge and supported by, but spaced from, said plate;



d. a plurality of resonator bars extending at right angles from said resonator support bar, and

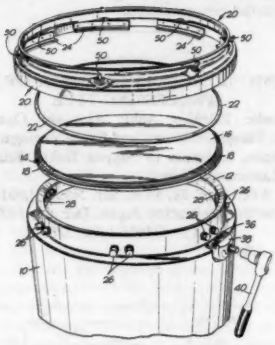
e. pickup means coupled to said resonator support bar.

4,218,952

DRUM TENSIONING

Ivor D. Arbiter, London, England, assignor to CBS/Arbiter Limited, London, England

Continuation of Ser. No. 613,919, Sep. 16, 1975, abandoned. This application Feb. 21, 1978, Ser. No. 879,776
Claims priority, application United Kingdom, Sep. 16, 1974, 40311/74
Int. Cl.² G10D *13/02*
U.S. Cl. 84—411 A **3 Claims**



1. A drum comprising:

a cylindrical drum shell and a drum head extending over an open end of the drum shell and bounded by a circumferential hoop lying outside the drum shell;

a counter hoop bearing on the hoop of the drum head for tensioning the drum head, the drum shell and the counter hoop forming between them an annular channel;

co-operating low-friction camming means and tensioning means extending into the annular channel, one from the drum shell and the other from the counter hoop, the camming means including a number of separate cam slides, spaced around the annular channel, each cam slide extending in the direction of its length only part way round the annular channel, and all cam slides making the same angle, in the direction of their lengths, with a plane perpendicular to the drum axis, the camming and tensioning means being so disposed that the one of them which extends from the drum shell overlies the other and contacts the other only through the undersurface of the

overlying one and the upper surface of the underlying one along an area which neither increases nor decreases during rotation of the counter hoop about the drum axis, so that rotation of the counter hoop about the drum axis is not excessively hampered by friction and moves the counter hoop axially of the drum; the camming and tensioning means also being so constructed and so related to each other that said counter hoop may be lifted off said drum shell when said counter hoop and drum shell are in predetermined relative rotated positions;

means for rotating the counter hoop about the drum axis with respect to the drum shell and, by virtue of the camming means and tensioning means, thereby simultaneously moving the counter hoop axially to vary the tension of the drum head;

an additional ring between the counter hoop and the drum head hoop and through which the counter hoop bears on the drum head hoop; and

means for adjusting the slope of the counter hoop relative to the additional ring.

4,218,953

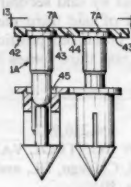
SELF-PIERCING POP RIVET FASTENERS

Harry M. Haytayan, Sunnyside La., Lincoln, Mass.

Continuation of Ser. No. 729,028, Oct. 4, 1976, abandoned. This application Mar. 21, 1978, Ser. No. 888,752

Int. Cl.[2] F16B *13/06*; B65D *85/24*

U.S. Cl. 85—68 **37 Claims**



1. A pop rivet assembly capable of forming a rivet hole in a workpiece consisting of at least two members, inserting a pop rivet into the rivet hole, and securing it in place in response to a single blow by an operator, said assembly comprising as distinct and separable elements:

(a) a piercing pin for punching a hole through the workpiece upon application of a force;

(b) a hollow housing having a top end and a bottom end; and

(c) a drive pin for (i) transmitting a force to the piercing pin to punch a hole through the workpiece, (ii) emplacing the housing in said hole, and (iii) affixing the housing to said workpiece;

said piercing pin comprising a pointed head and a shaft integral with and protruding from the base of said painted head, with said shaft extending into the bottom end of said housing and being gripped by said housing and said pointed head outside of and adjacent to the bottom end of said housing, said pointed head having a diameter greater than the diameter at the bottom end of said housing;

said drive pin extending into and projecting from the top end of said housing;

said piercing pin and said drive pin each being separately attached to said housing;

said drive pin and housing being arranged so that when said drive pin is driven further into said housing in the direction of said piercing pin said drive pin will drive the piercing pin out of the housing and also radially expand the bottom end of the housing; and

said drive pin having a peripheral flange located outside of said housing which is sufficiently large in diameter to be intercepted by an end surface of said housing when said drive pin is driven into said housing in the direction of said piercing pin.

12. A strip of pop rivet assemblies comprising:

(a) a plurality of piercing pins for punching holes through a workpiece upon application of a force;

(b) a plurality of hollow housings each having a top end and a bottom end and attached to one another in side-by-side relation; and

(c) a plurality of drive pins for

(a) transmitting a force to the piercing pins to punch holes through the workpiece;

(b) emplacing the housings in said holes, and

(c) affixing the housings to said workpieces;

each of said drive pins and said piercing pins being a separate and distinct element; and

said drive pins and said piercing pins extending into and protruding from the top and bottom ends respectively of said housings, said piercing pins and said driving pins being separately attached to said housings, said drive pins having peripheral shoulders located outside of said housings which are sufficiently large in diameter to be intercepted by an end surface of said housings when said drive pins are driven into said housings in the direction of said piercing pins, said drive pins and housings being arranged so that the bottom ends of said housings will expand when said drive pins are driven further into said housings in the direction of said piercing pins, said piercing pins having pointed heads projecting from the bottom ends of said housings which have a diameter at least as great as the outside diameter of said bottom ends of said housings, and said driving pins having a length such that when they are driven further into said housings they will drive said piercing pins out of the bottom ends of said housings.

4,218,954

SCREW FASTENER FOR A ROUND HOLE

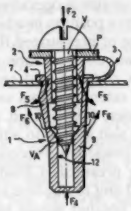
Henri Morel, Maule, France, assignor to ITW de France, Beauchamp Val d'Oise, France

Filed Oct. 6, 1978, Ser. No. 949,308

Claims priority, application France, Dec. 26, 1977, 77 39170

Int. Cl.[2] F16B *13/06*

U.S. Cl. 85—81 **9 Claims**



1. A plastic fastening device adapted for use in the round hole of a workpiece and further adapted to receive a screw having a predetermined diameter with high gripping torque to enable mounting of components even in thin sheet metal, said device comprising:

a hollow tubular element open at one end and having a head extending laterally at that end, said element being provided with external clipping means to thereby form a clippable element,

said clippable element being clippable in the round hole of said workpiece.

a wedge-forming complementary element provided with an inner through-bore having a diameter greater than said predetermined diameter, said clippable element including a body having at its upper portion a bore whose shape is complementary to that of the complementary wedge and upon introduction of said wedge causes an internal increasing expansion of said clippable body, progressively with the penetration of said wedge, said body at its lower

portion being provided with a circular bore smaller than said predetermined diameter, said upper and lower portions of said body carrying said two bores being connected together by a frustoconical zone creating a thinning zone,

a mounting screw passing freely through the bore of said complementary wedge element so as to engage and tap solely the lower portion of said clippable element,

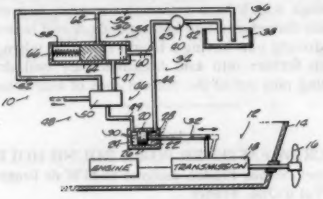
the force opposing the screwing torque being obtained by the rotation of the screw itself whereby simultaneously the head of said screw exerts pressure causing the axial descent of the complementary wedge element into the upper portion of the clippable element body and the axial movement of the lower portion of said clippable element toward said open head end progressively with the advance of the screw resulting therefore in a second external expansion of the clippable body.

4,218,955

PRESSURE ACTUATED SHIFTING MECHANISM

Gerald F. Bland, Kenosha, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Jan. 10, 1979, Ser. No. 2,377
Int. Cl.² F15B *13/02*
U.S. Cl. 91—47 **11 Claims**



1. An apparatus for delivering power to a marine propulsion device which comprises an engine, a propeller, transmission means for operatively connecting said engine with said propeller, said transmission means being movable between a neutral position in which said engine is operatively disconnected from said propeller and a drive position in which said engine powers said propeller, a source of pressurized fluid, a cylinder having opposed first and second ends, a piston movable in said cylinder between said first end and said second end, said piston including a piston rod extending from said piston through said first end of said cylinder, first conduit means for conducting pressurized fluid from said source to adjacent to said first end to displace said piston toward said second end, second conduit means for conducting pressurized fluid from said source to adjacent to said second end to displace said piston toward said first end, said second conduit means including flow control means for selectively directing the flow of pressurized fluid to adjacent to said second end, and means connecting said piston rod with said transmission means for locating said transmission means in said neutral position when said piston is located adjacent to said second end and for locating said transmission means in said drive position when said piston is located adjacent to said first end.

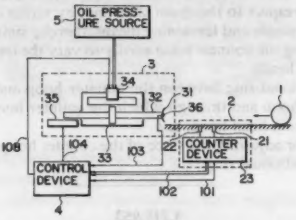
4,218,956

METHOD AND DEVICE FOR CONTROLLING A SHOCK ABSORBER

Motoo Uno, Kokubunji, Japan, and Hisashi Izumi, deceased, late of Tokyo, Japan (by Reiko Izumi, Junichi Izumi, Seiji Izumi, administrators), assignors to Hitachi, Ltd., Japan

Filed Nov. 25, 1977, Ser. No. 854,640
Claims priority, application Japan, Nov. 29, 1976, 51-142273
Int. Cl.² F15B *9/03, 9/09*
U.S. Cl. 91—363 R **13 Claims**

7. In a shock absorber having a movable member which comes into contact with a moving object, a control device for at least moderating an impact stress upon contact of the movable member and the moving object comprising first means for detecting a position and a velocity of the moving object and providing an output indicative thereof, second means for detecting contact between the object and said movable member and providing an output indicative thereof, third means for detecting a displacement value of said movable member and providing an output indicative thereof, and fourth means being responsive to the output of said first means for controlling said



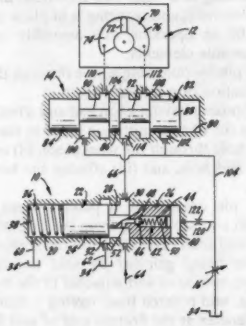
movable member to move said movable member in a direction of movement of the object at a velocity in accordance with the output of said first means, being responsive to the output of said second means for decelerating said movable member upon the detection of contact by said second means, and being responsive to the output of said third means for stopping said movable member at a command position when the detected displacement value of said third means has exceeded a predetermined value.

4,218,957

FLOW CONTROL VALVE

Herbert N. Underwood, Chicago, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Oct. 3, 1977, Ser. No. 839,088
Int. Cl.² F15B *11/08, 13/042*
U.S. Cl. 91—421 **3 Claims**



1. The combination of a flow control valve with a fluid actuated motor, the motor having an exhaust line and a pressure supply line, said flow control valve being connected between a source of fluid pressure and said fluid supply line, a variable orifice in the exhaust line, said flow control valve being connected to said exhaust line so that the supply of fluid to said fluid actuated motor is controlled by said fluid control valve in response to the pressure in said exhaust line, a sump connected to said exhaust line, said flow control valve having a connection to said sump such that an increase in flow and thus an increase of pressure in said exhaust line urges said flow control valve in a direction tending to connect said supply line to said sump and thereby decrease the flow and thus the pressure in the exhaust line, said flow control valve defining a

pressure chamber therein, a conduit extending between said pressure chamber and said exhaust line upstream of said variable orifice, a valve piston in said valve pressure chamber having the pressure in said chamber imposed thereon, a spring positioned to abut the piston and urge the piston in a direction tending to interrupt the connection to the sump, a restriction in the conduit extending between the pressure chamber and the exhaust line, said flow control valve including an inlet connected to the source of fluid pressure, and an over-pressure relief valve connected between said inlet and said conduit extending between said pressure chamber and said exhaust line at a point upstream of said restriction and said pressure chamber, whereby an over-pressure condition will move said flow control valve to relieve pressure.

4,218,958

SERVO-STEERING SYSTEM FOR VEHICLES

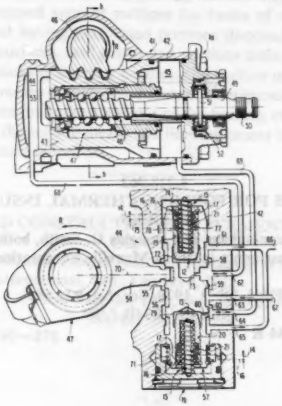
Klaus Katz; Reinhold Abt, both of Stuttgart; Jaromir Bordovsky, Berglen; Wolfgang Pfundstein, Stuttgart, and Georg Wingert, Böblingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 10, 1978, Ser. No. 885,188

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1977, 2710849

Int. Cl.[2] F15B *13/14;* F01B *31/00*

U.S. Cl. 91—434 **20 Claims**



1. A servo-steering mechanism for vehicles, comprising feedback means for feeding back a load-dependent reaction moment to a hand steering wheel, the feedback means including at least one reaction pressure cylinder means operatively connected with a working pressure chamber means of the servo-steering mechanism, a reaction pressure piston means arranged in said reaction pressure cylinder means and operatively connected to the steering hand wheel, said reaction pressure piston means being operable to be actuated in one axial direction by a working pressure of the working pressure chamber means, a support spring means for supporting said reaction piston means in the other axial direction, and abutment means fixed with respect to the reaction pressure cylinder means, said reaction piston means being adapted to come into abutment with the fixed abutment means when the working pressure in the working pressure chamber means reaches a value corresponding to a prestress of the support spring means, characterized in that the abutment means is fixed on the reaction pressure cylinder means at least one reducing spring means acting in a direction opposite the working pressure is provided for additionally supporting the reaction pressure piston means between a starting position with an essentially unstressed support spring means and shut-off position at the abutment means said reducing spring means being supported at the abutment means provided on the reaction pressure cylinder means.

4,218,959

PRESSURE REGULATING DIAPHRAGM

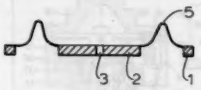
Toru Numaguchi, Tokyo, and Katuyoshi Murabayashi, Yokohama, both of Japan, assignors to Daicel Ltd., Osaka, Japan

Continuation of Ser. No. 783,235, Mar. 31, 1977, abandoned. This application Jan. 22, 1979, Ser. No. 5,665

Claims priority, application Japan, Apr. 7, 1976, 51-39567

Int. Cl.[3] F01B *19/00;* F16J *3/00*

U.S. Cl. 92—103 SD **6 Claims**



1. A pressure regulating diaphragm including:

an airtight, deformable, flexible thin member, said flexible member having a central portion and at least one annular, axially deformed and axially flexible deformable portion spaced radially between its central portion and edge,

a hard central member at the central portion of said flexible member,

an annular peripheral seal member of hard thermoplastic resin bounding the edge of said flexible member and coaxially spaced outboard of and surrounding said axially deformed portion of said flexible member and of said central member;

in which the improvement comprises the flexible member being a polyamide film having a thickness in the range of 10 microns to 100 microns,

said central member and peripheral seal member respectively being a polyamide disc and polyamide rim injection molded on the central portion and edge of said polyamide film, said disc being spaced coaxially inboard of said annular deformed portion of said film, said disc and rim being substantially coplanar and said annular deformed portion being reversely curved and projecting transversely therefrom to a distance exceeding the thickness of said hard polyamide disc and rim.

4,218,960

RAM WITH TWO-PART PISTON ROD

Bernard M. Bourges, Le Plessis Belleville, France, assignor to Societe Anonyme: Poclain, Belleville, France

Continuation of Ser. No. 806,274, Jun. 13, 1977, abandoned. This application Sep. 29, 1978, Ser. No. 947,072

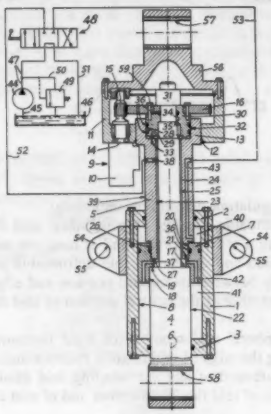
Claims priority, application France, Jul. 5, 1976, 76 20508

Int. Cl.[2] F16J *1/12;* F01B *3/00, 31/00*

U.S. Cl. 92—111 **4 Claims**

1. A ram comprising a cylinder having a pair of opposed upper (2) and lower heads (3), a piston (7) mounted to slide inside said cylinder, and a composite piston rod (4, 5), securely fixed to said piston for movement therewith in translation, said composite piston rod passing through both of said heads and comprising two coaxially positioned parts (4, 5) operatively arranged with each other for concurrent movement in translation and relative rotation with respect to each other about their common axis, the first (4) of said two parts having opposed ends respectively extending out of said cylinder beyond each of said heads (2, 3), and said second part (5) extending out of the cylinder (1) beyond only the upper head (2) from a position substantially adjacent to piston (7) to an outer end adjacent at least the end (31, 34) of the first part (4) which emerges from the cylinder at said upper head end, said second part (5) having an axial recess (23) formed therein defining a passage (24) which receives that portion of the upper part (4) which is located at the upper head end of the cylinder, said second part

also having two radial centering cylindrical bearing surfaces formed thereon (26, 28) respectively located near the piston (7) and near the outer end of the second part (5) outside the cylinder (1) above said upper head (2), said piston having a first radial cylindrical bearing surface (20) formed thereon cooperating with and engaging the adjacent radial bearing cylindrical surface (26) of the second part and said first part having a sleeve (30) secured to its outer end having an outer surface defining a second radial cylindrical bearing surface (32) formed thereon cooperating with and engaging the adjacent radial cylindrical bearing surface (28) at the outer end of the second



part for centering the two parts with respect to each other, said second part (5) also including a pair of shoulders (27, 29) extending perpendicularly to the axis (6) of the composite rod and facing in opposite directions, said shoulders (27, 29) being respectively located adjacent to piston (7) and the outer end (30) of said second part and said piston having a shoulder (21) formed thereon and said sleeve having a shoulder (33) formed thereon, said shoulders on the piston and sleeve extending perpendicularly to the axis of the rod and facing each other and being respectively located to engage the shoulders of the second part for cooperation therewith to maintain a fixed relative axial position between the two parts.

4,218,961

LUBRICATING SYSTEM FOR HIGH-PRESSURE PUMP

Wolfgang Maasberg, Hunxe-Krudenburg, and Adalbert Huperz, Hockenheim, both of Fed. Rep. of Germany, assignors to Woma-Apparatebau Wolfgang Maasberg & Co. GmbH, Duisburg, Fed. Rep. of Germany

Filed Oct. 25, 1978, Ser. No. 954,549

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1977, 2747843

Int. Cl.[2] F01B *31/10*

U.S. Cl. 92—156 **11 Claims**

1. A pump comprising:

a housing defining a cylinder chamber;

a piston reciprocal in said chamber and formed with at least one shoulder defining in said chamber a variable-volume pumping compartment;

an orbital crank;

a connecting rod having one end connected to said crank and another end connected to said piston;

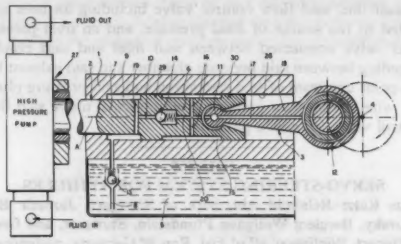
a supply holding a body of liquid lubricant;

an upstream conduit between said supply and said variable-volume compartment;

an upstream check valve in said upstream conduit permitting fluid flow therein only from said supply to said variable-volume compartment;

a downstream conduit extending from said variable-volume compartment to both ends of said connecting rod;

a downstream check valve in said downstream conduit between said ends of said connecting rod and said variable-volume compartment; and



drive means for orbiting said crank and thereby cyclically increasing and decreasing the volume of said variable-volume compartment for pumping said lubricant through said upstream conduit, through said variable-volume compartment, and through said downstream conduit to said ends of said connecting rod.

4,218,962

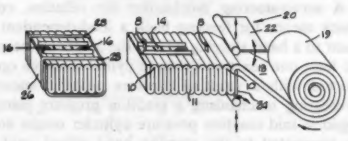
APPARATUS FOR FORMING THERMAL INSULATION BLOCKS

Richard N. Cunningham, and Douglas D. Smith, both of Littleton, Colo., assignors to Johns-Manville Corporation, Denver, Colo.

Filed Jul. 3, 1978, Ser. No. 921,682

Int. Cl.[2] E04B *1/80*

U.S. Cl. 93—84 R **11 Claims**



1. Apparatus for the formation of modular blocks of folded fibrous materials, which comprises:

(a) means for forming sequential transverse folds opening in opposite directions in a longitudinal fibrous body;

(b) means for inserting modular block supporting members into folds in said fibrous body as said folds are being formed by said folding means;

(c) means for supplying said supporting members seriatim to said means for inserting; and

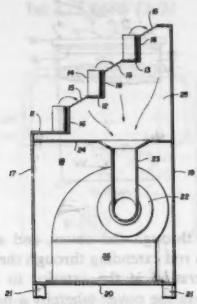
(d) means for identifying, according to a predetermined pattern, those specific folds into which said supporting members are to be inserted by said inserting means and for controlling said inserting means to insert said supporting members into only those identified folds.

4,218,963

VENTILATING SYSTEM FOR VOTIVE STANDS

Peter W. Burnetter, 78 S. Pine Ave., Albany, N.Y. 12208

Filed Jan. 18, 1979, Ser. No. 4,398
Int. Cl.[2] F23J *11/00*
U.S. Cl. 98—115 R 2 Claims



1. In a votive stand, supporting surface means for a plurality of votive candles, said supporting surface means comprising plural stepped support surfaces for banks of votive candles, said stand having perforated portions disposed between said stepped surfaces, said perforated portions defining an inlet for the emissions of burning candles, and suction means including filtering means mounted in said stand contiguous to the stepped surfaces to draw the emissions of the burning candles into and through the suction means and filtering means for discharge in a clean state therefrom.

4,218,964

LID CONSTRUCTION FOR FERMENTATION CONTAINER

Leigh P. Beadle, Chapel Hill, N.C., assignor to Specialty Products International, Ltd., Carrboro, N.C.

Filed May 21, 1979, Ser. No. 40,960
Int. Cl.[3] C12C *11/04*
U.S. Cl. 99—275 2 Claims

1. A single stage fermentation assembly comprising, in combination:

(a) an integral plastic molded container having bottom and side walls and an open top;

(b) an integral plastic molded lid mating said container open top and having a peripheral edge portion detachably secured in a substantially airtight relation to the peripheral top edge portion of said container and having at an off-center location a molded air lock support formation, said air lock support formation providing a vertically-oriented aperture with a downwardly and inwardly directed surrounding tapered surface and as part of said formation a surrounding annular rim rising at least partially above the plane of the top surface of said lid surrounding said formation; and

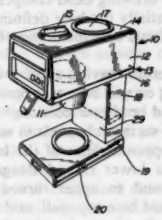
(c) a fermentation air lock of the type having a vertical hollow stem with an outer surface tapering inwardly towards the bottom of the stem and air lock structure above said stem designed to allow escape of fermentation gas through a pool of water contained therein, said air lock support formation being designed to receive, grip and retain said stem in a detachable, substantially airtight, resilient gripping relation with the stem taper mating said formation aperture taper and with said rim being formed to provide a resilient grip around said stem immediately above the top surface of said lid.

4,218,965

BEVERAGE BREWER

Stanton H. Petry, Arlington Heights, Ill., assignor to Cory Food Services, Inc., Chicago, Ill.

Filed Apr. 18, 1979, Ser. No. 31,054
Int. Cl.[2] A47J *31/52, 31/00*
U.S. Cl. 99—283 9 Claims



1. In a beverage brewer having a cabinet having a hollow rear upright portion carried on a base and supporting an upper brewing head, said upright portion defining a forward vertical wall and vertically extending inturned spaced rear flanges and being formed of sheet metal, an electrically operable valve for controlling flow of pressurized water to the brewing head, an electrically operable timer for controlling the operation of the valve to provide a preselected quantity of brewing water during a brewing operation, and electrical wires for providing electrical current to the valve and timer, the improvement comprising:

a one-piece mounting member disposed within said cabinet upright portion, said mounting member defining an upper flange abutting said forward wall of the upright portion, an upright mounting wall portion, a spacer mounting an upper end of said mounting wall portion to said flange for spacing said mounting wall portion rearwardly of said upright portion forward wall, a horizontal lower base wall at the lower end of said mounting wall, and a lower horizontal flange turned vertically from the rear end of said base wall;

means securing said upper flange to said forward wall of the upright portion;

means securing said lower flange at its opposite ends to said inturned flanges of said upright portion whereby said mounting member reinforces said formed sheet metal upright portion of the cabinet;

means securing said valve to said base; and

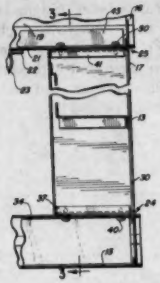
means securing said timer to said mounting wall portion.

4,218,966

BEVERAGE BREWER HOUSING STRUCTURE

Stanton H. Petry, Arlington Heights, Ill., assignor to Cory Food Services, Inc., Chicago, Ill.

Filed Apr. 30, 1979, Ser. No. 34,848
Int. Cl.[3] A47J *31/54, 31/00*
U.S. Cl. 99—295 **12 Claims**



1. In a beverage brewer having a brewing head defining a rear portion and a front portion and having a massive instantaneous heat transfer device for effectively heating cold supply water to brewing temperature, and means for removably supporting a brewing cartridge on the brewing head to receive the heated water for brewing a beverage therein, improved means for supporting the brewing head comprising:

a hollow substantially flat base defining a front portion and a rear portion, said base including a bottom wall and a top wall;

a hollow rear upright having a lower end defining inturned flanges resting on said base rear portion and an upper end supporting said head rear portion;

a first pair of C-section channels in said base rear portion, one each at opposite sides of the base rear portion and each having a lower turned flange abutting said base bottom wall, and an upper turned flange abutting the underside of said base top wall, said flanges of the pair of channels extending toward each other;

a second pair of C-section channels in said upright lower end and opening upwardly one each at the opposite sides thereof in overlying relationship to said turned flanges of said pair of L-section channels, said C-section channels each defining a bight portion resting on said upright inturned flanges and an outer leg portion juxtaposed to the adjacent side of the upright; and

threaded securing means securing the flange of each said first C-section channel to the bight of the overlying second C-section channel through the base top wall whereby said pair of second C-section channels and upright inturned flanges are effectively supported on said base top wall and said base top wall is reinforced by said pair of first C-section channels, each of said first C-section channels, base top wall, second C-section channels, and upright inturned flanges defining a metal wall portion whereby the connection of the upright to the base is defined by four layers of metal wall portions.

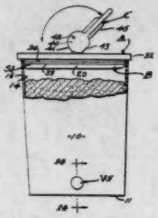
4,218,967

VACUUM PUMP CLOSURE FOR CANISTERS AND VACUUM PACK CONTAINERS

John H. Batchelor, 1658 Lomacita Ter., El Cajon, Calif. 92021

Continuation-in-part of Ser. No. 963,691, Nov. 27, 1978, abandoned. This application Jun. 25, 1979, Ser. No. 51,366
Int. Cl.[2] B65D *57/16;* A23B *0/00*
U.S. Cl. 99—472 **30 Claims**

1. A removable vacuum pump closure for the open perimeter end of a container with content therein and including, a moveable diaphragm with seal means releasably engageable with the perimeter end of the container, a cover overlying the diaphragm and attached at its perimeter thereto forming a pump chamber therebetween, inlet check valve means opening upwardly through the diaphragm, outlet check valve means



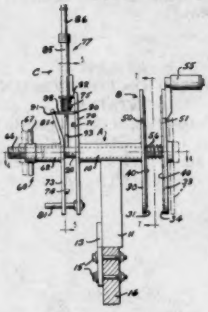
opening upwardly through the cover, and actuating means comprising a piston rod extending through the pump chamber and cover for operation at the exterior to reciprocate the diaphragm relative to the cover whereby a partial vacuum is increasingly drawn upon said container and content therein.

4,218,968

NUT CRACKING MACHINE

Almer K. Livingston, P.O. Box 66, Smithville, Ga. 31787

Filed Aug. 24, 1979, Ser. No. 69,430
Int. Cl.[3] A23N *5/00;* A47J *43/26*
U.S. Cl. 99—572 **20 Claims**



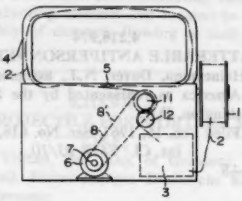
1. A nut cracking machine including a frame; a base plate having a substantially planar cracking face provided with a plurality of spaced apart rib means projecting above the surface of said substantially planar cracking face; mounting means for supporting said base plate on said frame in a substantially fixed position; a holding plate having a substantially planar cracking face provided with a plurality of spaced apart rib means projecting above the surface of said substantially planar cracking face; mounting means for rotatably supporting said holding plate of said frame with said cracking face thereof substantially parallel to and confronting said cracking face of said base plate in spaced apart relation thereto and for lineal movement thereof toward and away from said base plate along the axis of rotation thereof; means for rotation of said holding plate; spring means for urging said holding plate away from said base plate for receiving a nut between the confronting cracking faces thereof; and thrust means rendered operational by rotation of said holding plate to axially move said holding plate against the urging of said spring means and toward said base plate for retaining a nut between the cracking faces thereof and in rolling and cracking engagement therewith.

4,218,969

BAND FEEDING AND TIGHTENING APPARATUS FOR STRAPPING MACHINE

Yoshiaki Kasuga, Yokohama, Japan, assignor to Nichiro Kogyo Company, Limited, Yokohama, Japan

Filed Feb. 1, 1979, Ser. No. 8,602
Int. Cl.[2] B65B 13/22
U.S. Cl. 100—32 2 Claims



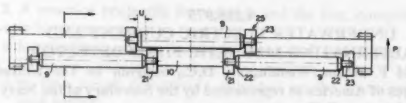
1. A band feeding and tightening apparatus in a strapping machine which comprises a return roller having a high friction peripheral surface being disposed on a shaft, a feed roller having a low friction peripheral surface, said rollers contacting each other under pressure, a motor for driving said shaft and rotating said rollers, a one way clutch on said return roller and said shaft operable for placing said return roller in a free condition when said shaft is driven in one direction by said motor and for driving said return roller when said shaft is rotated in the other direction by said motor, a friction plate and a differential reducing machine fixed through said friction plate to said shaft of said return roller.

4,218,970

COMPRESSION ROLLERS FOR DEHYDRATION EQUIPMENT

Ernst Tutschek, and Johann Sbaschnigg, both of Graz, Austria, assignors to Maschinenfabrik Andritz Aktiengesellschaft, Austria

Filed Feb. 17, 1978, Ser. No. 878,887
Int. Cl.[2] B30B 3/02
U.S. Cl. 100—153 1 Claim



1. In dehydrating equipment, in particular double belt presses, in which an upper endless sieve belt is guided by means of parallelly supported rollers, with parallelly supported rollers being similarly arranged below and on which a lower endless sieve belt is guided, the suspension to be dehydrated being introduced between the sieve belts, the sets of rollers being divided into a wedge section, a registering section, a pre-compression section and a main compression section,

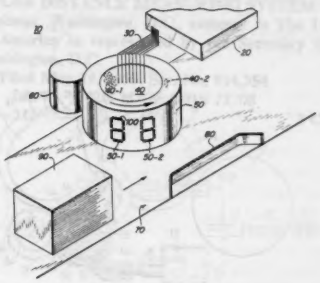
the improvement comprising that the compression rollers in the pre-compression section are composed of several pieces extending across the equipment and, when viewed in the direction of motion of the sieve belts, are alternatingly offset backwardly or forwardly, the ends of the rollers penetrating the region of adjacent rollers in overlapping fashion, and bearings for each roller resting on a common support extending through the equipment from end to end.

4,218,971

SEGMENTED CHARACTER ACTUATION SYSTEM FOR ROTATING PRINT WHEEL

Robert J. Uhl, Wayne, and Alexander A. Schwarz, Ogdensburg, both of N.J., assignors to Dennison Manufacturing Company, Framingham, Mass.

Filed Apr. 28, 1978, Ser. No. 900,847
Int. Cl.[3] B41F 17/26
U.S. Cl. 101—35 8 Claims



1. Apparatus for the imprinting of alphanumerical designations and other symbols in cases, cartons, and the like comprising:

a control logic module which is programmable with desired designations;

a rotating print cylinder having a number of perimetric symbols composed of a given number of projectible segments, said cylinder having a stationary core;

means for transmitting a control signal from said control logic module to said stationary core, and for converting electrical impulses corresponding to the programmed numerical designations into a form suitable for activating a selected set of said segments;

means responsive to said converted electrical impulses for activating said selected segments to cause them to project from the perimeter of the rotating print cylinder, wherein each of said selected segments with its activating means constitutes a self-contained unit;

a cartridge for coating said selected segments with ink;

means for bringing objects to be imprinted into contact with the ink coated selected segments; and

means responsive to said converted electrical impulses for resetting said selected segments whereby a new set of segments may be activated, wherein each of said selected segments with its resetting means constitutes a self-contained unit.

4,218,972

SWITCHING APPARATUS BETWEEN PRINTING MODES IN PRINTING CYLINDERS OF ROTARY PRESS

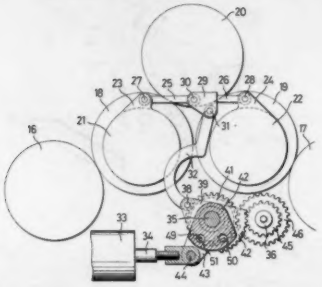
Yuji Fujishiro, Tokyo, Japan, assignor to Kabushiki Kaisha Tokyo Kikai Seisakusho, Tokyo, Japan

Filed Mar. 12, 1979, Ser. No. 19,876
Claims priority, application Japan, Feb. 2, 1979, 54-11245
Int. Cl.[3] B41F 7/10, 7/12, 13/28
U.S. Cl. 101—177 3 Claims

1. In a mechanism having two plate cylinders and an impression cylinder which are located at positions corresponding to apices of an equilateral triangle, printing cylinders between said impression cylinder and respective plate cylinders, eccentric sleeves attached to the both axial end supports of respective printing cylinders, and a common link mechanism associated with said eccentric sleeves, said common link mechanism being adapted to actuate said eccentric sleeves so as to displace said printing cylinders relatively to each other and to the other of said cylinders, so as to provide two extreme positions of said

cylinders, one of said extreme positions in which connection of four of said cylinders except said impression cylinder is attained and the other of said extreme positions in which connection of five of said cylinders is attained,

said link mechanism having a starting end, an actuator with a movable rod end, an apparatus for actuating said common link mechanism comprising an angle increase shifting mechanism disposed between the said starting end of said link mechanism and the said rod end, said angle increase shifting mechanism including a main shaft and a sub shaft



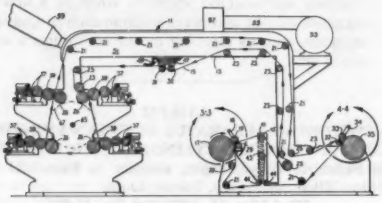
mounted on a frame, a driving gear adapted to follow the displacement of said rod of said actuator, a driven gear adapted to transmit a displacement, to said starting end of said link mechanism, said driving and driven gears being mounted on said main shaft, and relay gears unitary with each other and having different diameters, said relay gears being in engagement with respective one of said driving and driven gears and mounted on said sub shaft, whereby the switching from one extreme position to other is performed by a single motion of said rod.

4,218,973

MATERIAL HANDLING APPARATUS FOR PRINTING PLASTIC FILM

Alphee J. Bouffard, Fayetteville, Ark., and Alphee T. J. Bouffard, Bolingbrook, Ill., assignors to Alpha Associates, Inc., Fayetteville, Ark.

Filed May 18, 1978, Ser. No. 907,070
Int. Cl.³ B41F *13/02, 5/06, 5/16*
U.S. Cl. 101—181 **4 Claims**



1. In apparatus for printing on extensible flexible sheet material including a plurality of printing cylinders, a continuous elongated support web for said material passing sequentially under said rolls, a plurality of web rolls with cylindrical surfaces in contact with said web, means for driving at least one of said web rolls and thereby driving said web, a supply roll and a takeup roll for said sheet material, the improvement of flexible sheet supply and takeoff apparatus comprising,

a contact roll supported on pivot arms adjacent said supply roll for movement in an arc intercepting the surface of a supply roll of sheet material at both the full and near empty conditions of said roll, said contact roll having a cylindrical surface with a substantial coefficient of friction relative to said sheet material, and

means for rotating said contact roll at a speed causing its surface velocity to be a constant factor of from 1% to 10% less than the surface velocity of said support web, said means including a rim integral with said roll of slightly larger diameter than said cylindrical surface and in frictional engagement with the surface of said one of said web rolls.

4,218,974

SCATTERABLE ANTIPERSONNEL MINE

Robert W. Heinemann, Dover, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 16, 1967, Ser. No. 618,269
Int. Cl.³ F42B *23/10*
U.S. Cl. 102—8 **4 Claims**

1. A scatterable antipersonnel mine capable of arming within a specified delay time comprising,

an explosive mixture comprising a high explosive base charge mixed with a sensitized initiating material and a bulking agent wetted with a volatile liquid adapted to dilute and temporarily desensitize said initiating material, and thereby prevent the immediate operation of said mine,

said bulking agent providing for a larger quantity of the desensitizer liquid to be in contact with the explosive mixture,

a porous outer housing of woven cloth covering said explosive mixture whereby said volatile desensitizer liquid may evaporate there through and thereby resensitize and rearm said material and said mine,

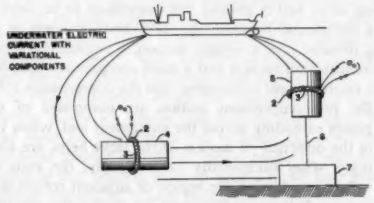
and a flat stiffener plate positioned within said housing with said explosive mixture in contact therewith on either side thereof to provide resistance against which said mixture may be ground upon in response to external pressure exerted on said mine, thereby to effect detonation following said resensitizing and rearming delay.

4,218,975

UNDERWATER ELECTRIC CURRENT AND ALTERNATING MAGNETIC FIELD DETECTOR

Donald F. Ream, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 23, 1952, Ser. No. 295,142
Int. Cl.³ F42B *21/38, 21/48*
U.S. Cl. 102—18 M **8 Claims**



1. An underwater eddy current detector comprising a hol-

low elongated conducting member, said conducting member having a plurality of longitudinal conducting paths forming portions of the exterior surface of said conducting member, a portion of said conducting member formed of material having conductivity of lesser degree than said conducting member and arranged to direct eddy currents induced in said conducting member to said conducting paths, a plurality of toroidal detector coils wound upon annular laminated structures, each of said detector coils encircling one of said conducting paths, whereby a potential which is proportional to a detected signal is induced in said coils when said conducting member is submerged in a conducting medium and located in the path of flow of a plurality of currents flowing in said conducting medium.

4,218,976

PRACTICE PROJECTILE FOR MORTARS AND THE LIKE

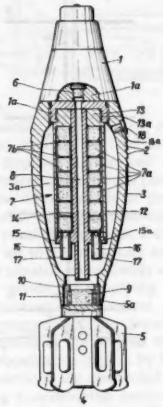
Willi Luebbers, Trittau, Fed. Rep. of Germany, assignor to Nico-Pyrotechnik Hanns-Juergen Diederichs KG., Trittau, Fed. Rep. of Germany

Filed Jun. 15, 1978, Ser. No. 915,604

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1977, 2726945

Int. Cl.[2] F42B *5/10*

U.S. Cl. 102—49.1 **6 Claims**



1. A practice projectile for mortars and the like, comprising in combination,

a longitudinal casing, having a front end and a rear end having an axially extending rear passage;

nose fuse means operatively mounted on the front end of said casing;

a tail section removably mounted in said rear passage;

a percussion cap operatively mounted in said casing and being adapted to be ignited by said nose fuse means upon impact of said projectile;

a firing duct mounted in said casing and axially extending from proximity of said front end to proximity of said rear end;

a propellant charge mounted in said tail section; a pyrotechnic charge surrounding said firing duct in said shell casing;

delay charge means mounted in said casing forming a link in the ignition chain between said percussion cap and said pyrotechnic charge; and

a cylindrical housing coaxially mounted in said shell casing, said pyrotechnic charge being disposed in said cylindrical housing, said cylindrical housing having end wall means at its opposite ends and said firing duct axially extending through said cylindrical housing and said end wall means;

whereby upon impact of the projectile the nose fuse means is adapted to activate an ignition chain causing the percussion cap to emit an ignition flame that travels through said firing duct to first ignite said propellant charge in said tail section to thereafter cause an expulsion of said tail section from said rear passage of the rear end of the casing and the ignition of said pyrotechnic charge and formation of pyrotechnic gases so that these pyrotechnic gases may exit from said rear passage.

4,218,977

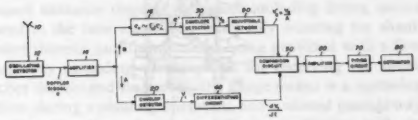
DOPPLER DISTANCE MEASURING SYSTEM

Henry P. Kalmus, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 19, 1959, Ser. No. 814,354

Int. Cl.[3] F42C *13/04;* G01S *13/08*

U.S. Cl. 102—214 **3 Claims**



3. A missile fuzing system adapted to detonate the missile at a predetermined altitude regardless of the reflection coefficient of or the velocity of approach to the earth, said system comprising in combination: an antenna adapted to radiate radio frequency energy toward a target and receive reflected energy therefrom, an oscillating detector connected to said antenna, said oscillating detector mixing the transmitted and reflected energy to produce a doppler signal at its output representative of the relative velocity between the missile and the earth, first envelope detection means connected to the output of said oscillating detector for producing a negative signal corresponding to the envelope of said doppler signal, a network connected to the output of said oscillating detector for producing an output signal having a peak amplitude which is proportional to the product of a first and a second quantity, said first quantity being proportional to the peak amplitude of said doppler signal and said second quantity being proportional to doppler frequency, second envelope detection means connected to said network for producing a positive signal corresponding to the envelope of said output signal, a differentiating circuit comprising a first resistor having one end connected to circuit ground, a capacitor having one end connected to the other end of said first resistor and the other end of said capacitor connected to the output of said first envelope detection means so that a voltage is developed across said first resistor corresponding to the differentiation of the negative signal produced by said first envelope detection means, a variable resistor having one end connected to the point intermediate said first resistor and said capacitor and the other end of said variable resistor connected to the output of said second envelope detection means so that a second voltage is developed across said first resistor corresponding to the positive signal produced by said second envelope detection means, the amplitude of said second voltage being dependent on the adjustment of said variable resistor, an amplifier to which the junction point of said first resistor, said capacitor and said variable resistor is connected to apply the sum of said first and said second voltages across said resistor to said amplifier, a firing circuit to which the output of said amplifier is set, said firing circuit producing a firing pulse in response to the zero cross over of said sum of said first and second voltages, the altitude at which said sum appearing across said first resistor becomes zero being determined by the adjustment of said variable resistor, and a detonator connected to the output of said firing

circuits for initiating detonation upon receipt of said firing pulse.

4,218,978

APPARATUS FOR TAMPING OR PACKING THE BED OF RAILWAY TRACKS

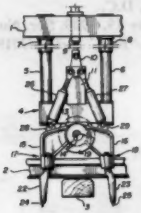
Sandro Pasquini, Latour-de-Peilz, Switzerland, assignor to Matisa Materiel Industriel S.A., Lausanne, Switzerland

Filed Jan. 30, 1978, Ser. No. 873,532

Claims priority, application Switzerland, Feb. 18, 1977, 2027/77

Int. Cl.[2] E01B 27/16

U.S. Cl. 104—12 **1 Claim**



1. An apparatus for compacting the bed of a railroad track which apparatus includes a mobile frame for movement along the track, at least one support for tamping tools mounted for vertical displacement on the frame, at least two tamping tools oppositely mounted on said tool support and each comprising an arm having at least one pick extending therefrom and provided with an end blade disposed substantially in a vertical plane, at least one motor driven rotary eccentric shaft, journalled in a bearing rigidly connected to the tool support and comprising eccentric bearings on each of which the arm of a tamping tool is pivoted by its end distal from the pick to impart vibratory oscillations to said tool, the arms of each tool having a generally squared elbowed configuration and a double-acting piston cylinder extending in a substantially vertical direction and pivoted at one end in the region of the elbow of the arm of the tool at a point above the eccentric shaft and at its other end to the tool support to effect pivotal movements of the arm about the bearing whereby to transmit only generally horizontal vibratory oscillations to the tool blades.

4,218,979

PIZZA STAND

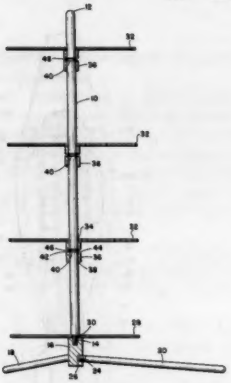
Joseph P. Esposito, 7039 E. 71st Pl., Tulsa, Okla. 74133, and Mesta M. Alexander, Tulsa, Okla., assignors to Joseph P. Esposito, Tulsa, Okla.

Filed Apr. 9, 1979, Ser. No. 28,082

Int. Cl.[3] A47B 9/04

U.S. Cl. 108—106 **1 Claim**

1. A stand for supporting a plurality of objects at a plurality of different vertical levels comprising a vertical rod, means for supporting said rod in a vertical disposition, said rod having a plurality of spaced circumferential grooves therein of substantially equal vertical width, a plurality of cylindrical collars each having a central bore therethrough of substantially the same size as the cross-section of said rod, each collar having a pair of opposite radial slots therein extending from the outside of said collar to the bore thereof and being of substantially the same vertical width as one said grooves, a horizontal plate connected to each collar and extending radially outwardly therefrom for supporting objects thereon, a plurality of clips for connecting said collars to said rod, each clip being made of a continuous piece of spring wire having a thickness substantially equal to the vertical width of one of the grooves of said rod and being bent intermediate its end to form a semi-circular loop with a first pair of spaced arms extending outwardly from opposite ends of said loop and defining with said loop a substantially horizontal plane, said first pair of arms being adapted to be received in a locking position in the opposite slots in a first one of said collars and also in a first one of said circuferential grooves on said vertical rod when said opposite slots of said first collar are placed in alignment with said first groove so as to lock said first collar in position in alignment with said first groove, said loop of said clip extending outwardly away from said first collar when said clip is positioned in said locking position, said first pair of arms extending divergently outwardly beyond said first collar on a side thereof opposite from said loop to a pair of outer ends, a second pair of spaced arms having a pair of inner ends and a pair of outer ends, the inner ends of said second pair of arms being connected respectively to the outer ends of said first pair of arms, said second pair of arms extending convergently towards each other in said horizontal plane and in a direction away from said loop, the outer ends of said second pair of arms being closely adjacent each other, said clip including a third pair of arms extending from one pair of ends thereof to a second pair of ends thereof, said



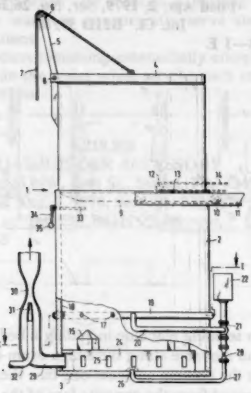
third pair of arms having their one pair of ends connected respectively to the outer ends of said second pair of arms and extending therefrom in substantially parallel relation with each other at right angles to said horizontal plane and on the same side thereof, said clip also including a fourth pair of arms having a pair of inner ends and a pair of outer ends constituting the ends of said piece of spring wire, said fourth pair of arms having their inner ends connected respectively to the second pair of ends of said third pair of arms and extending divergently away from each other and from said third pair of arms in a direction towards said loop, said fourth pair of arms being substantially parallel to said second pair of arms and being adapted to engage the outer surface of said first collar at positions spaced from said slots thereof, whereby, when a force is exerted against said third arms in a direction towards said first collar, a relative wedging action will occur between said first collar and said fourth pair of arms and whereby, as said clip moves in the direction of said force, said first pair of arms will be forced outwardly relative to each other so as to be urged out of said first groove.

4,218,980

FURNACE ESPECIALLY WELL SUITED FOR BURNING STRAW, WOOD WASTE MATERIALS AND THE LIKE

Josef Probsteder, Bachanger 14, 8399 Ruhstorf, Fed. Rep. of Germany

Filed Apr. 4, 1978, Ser. No. 893,414
Claims priority, application Fed. Rep. of Germany, May 11, 1977, 2721213
Int. Cl.[2] F23G 9/00
U.S. Cl. 110—196 11 Claims



1. A furnace for burning bales of straw, comprising an afterburning compartment, a closeable feed hopper for receiving the bales of straw disposed above said compartment, said afterburning compartment comprising a passage which extends substantially over the whole width of the feed hopper and which comprises lateral apertures distributed over its whole length for receiving combustible gases, a device for supplying primary combustion air to a combustion and low-temperature carbonization region situated immediately above the afterburning compartment, a device for supplying secondary combustion air to the afterburning compartment, a device connected to the afterburning compartment for drawing off gases which enter said lateral apertures formed in the combustion and low-temperature carbonization region by burning the bales of straw comprising a suction tube connected to said afterburning compartment having a constricted section and a nozzle disposed in the suction tube for delivering a fast flowing gas to the suction tube in the direction of the outflowing gases.

4,218,981

SEED PLANTER

Ralph B. Kelly, Rte. 2, Box 22, Catoosa, Okla. 74015

Filed Jun. 2, 1978, Ser. No. 911,886
Int. Cl.[2] A01C 5/00
U.S. Cl. 111—89 1 Claim

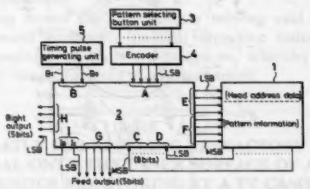
1. A seed planter comprising elongated tube means having a passageway extending longitudinally therethrough and open at both ends, hopper means provided at one end of the tube means and in open communication with the passageway for receiving seeds therein and directing the seeds into the passageway by gravity, adjustable gauge means provided in the proximity of the opposite end of the tube means and operable for determining preselected distances from the tube means to facilitate planting seeds in spaced relation corresponding to said preselected distance, seed reservoir means disposed in the proximity of the hopper means for retaining a supply of seeds therein; said seed reservoir means comprising a container, a lid member hingedly secured to said container to provide alternate open and closed positions therefor, and latch means cooperating between the container and lid member for selectively closing the container for precluding accidental loss of seeds therefrom; said gauge means comprising a shank member removably carried by the tube means, ball means provided in the proximity of one end of the shank member, and dimensional indicia provided on said shank member for cooperating with the tube means to provide for preselected dimensional relationship between the position of the ball means and the tube means for facilitating the planting of the seeds with predetermined distances therebetween; and including fitting means secured to the tube means for removably securing the shank member thereto; said fitting means being provided with a first passageway extending therethrough for receiving the shank member therein and supporting the gauge means in a operating position during a planting operation, and a second passageway extending therethrough substantially perpendicular with respect to the first passageway for receiving the shank member therein and supporting the gauge means in a storage position; said tube means and hopper means being constructed of a lightweight tough plastic material; and said tube means is sectional for facilitating storage and shipment of the seed planter.

4,218,982

PATTERN GENERATING SYSTEM FOR USE IN ELECTRONIC SEWING MACHINES

Toshihiko Daido, Nara, and Hiroshi Kunimatsu, Osaka, both of Japan, assignors to Koyo Seiko Company Limited and Koyo Machine Industries Company Limited, both of Osaka, Japan

Filed Dec. 11, 1978, Ser. No. 968,366
Claims priority, application Japan, Jun. 19, 1978, 53-74390
Int. Cl.[2] D05B 3/02
U.S. Cl. 112—158 E 1 Claim



1. A pattern generating system for use in an electronic sewing machine comprising a static memory for storing data relating to the bight movement of the needle and to the feed movement of the feed dog, a drive unit which controls the amount and direction of bight and feed of the sewing machine so as to perform pattern stitching, means for applying the data stored in the static memory to the drive unit to control sewing machine pattern stitching, said system being characterized in that output-oriented data relating to the amount of bight or feed for a stitch pattern and order instruction-oriented data relating to the order in which said output-oriented data is read out are stored in the static memory separately in such a manner as to distinguish between the data relating to bight and the data relating to feed, data relating to the address at which the respective head data on stitch patterns is stored being stored at specified addresses in said static memory addressed by selection instructions corresponding to said stitch patterns given as

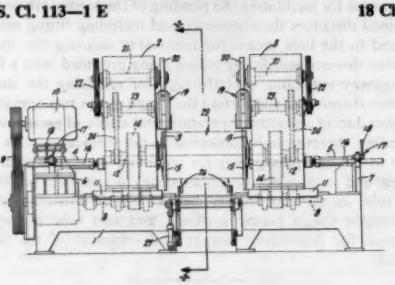
by a pattern selecting button unit, and means connecting said static memory to a microcomputer which performs a control operation such that it indexes said static memory, analyzes said order instruction-oriented data and updates addresses or gives said output-oriented data to the drive unit, said connection of said static memory to said microcomputer being such that said static memory can be exchanged with another static memory having stored therein data relating to other different stitch patterns.

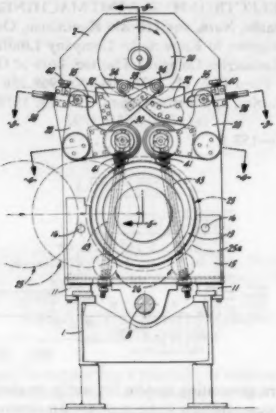
4,218,983

SINGLE-CAM ACTUATED DRUM SEAMING MECHANISM

Robert A. Rhinefrank, Stockton, and William H. Sunday, Lodi, both of Calif., assignors to Carando Machine Works, Stockton, Calif.

Filed Mar. 16, 1979, Ser. No. 21,027
Int. Cl.³ B21D *39/02*
U.S. Cl. 113—1 E **18 Claims**





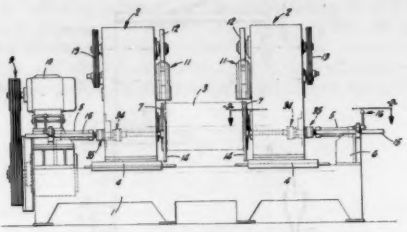
1. In a machine—for seaming a pre-positioned head in a drum—which includes a column, a circular chuck journaled on the column, the chuck being adapted for engagement with the head of an axially alined drum, and means to rotate the chuck and in turn the drum; a single-cam actuated, drum seaming mechanism mounted on the column and comprising a rotary cam journaled on the column in spaced relation above the chuck, the chuck and cam axes being parallel, means to rotate the cam, and a pair of spaced arm units pivotally mounted on the column between the chuck and the cam, each arm unit engaging at one end with the cam and being fitted at the other end with a seaming roll, the seaming rolls being swingable by the pivotally mounted arm units, upon their response to rotation of the cam, from a non-working position clear of the drum to a working, drum head seaming position.

4,218,984

DRUM SEAMING MACHINE WITH COLUMN POSITIONING AND STROKE LIMITING ARRANGEMENT

Robert A. Rhinefrank, and Vladimir E. Leibovich, both of Stockton, Calif., assignors to Carando Machine Works, Stockton, Calif.

Filed Apr. 2, 1979, Ser. No. 26,363
Int. Cl.³ B21D *39/02*
U.S. Cl. 113—1 E **19 Claims**



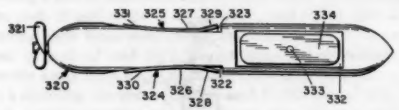
1. A drum seaming machine including a bed, a column supported by and movable along the bed, a drum-engaging chuck journaled on the column adjacent one face thereof, a tailstock on the bed spaced from the opposite face of the column, power means connected between the tailstock and column to reciprocate the latter on the bed, a drum stripper associated with the chuck, at least one longitudinal stripper rod fixed at one end to the stripper and thence extending toward and normally fixed in connection with the tailstock, and column stop means on the stripper rod operative in contact with the column to limit reciprocal travel thereof between a pre-selected advanced position and a retracted position.

4,218,985

STEERING AND STABILIZATION APPARATUS FOR TORPEDO

Allen Jones, Jr., 5028 Lauderdale Ave., Virginia Beach, Va. 23455

Division of Ser. No. 822,227, Aug. 5, 1977, Pat. No. 4,135,687, which is a continuation-in-part of Ser. No. 661,626, Feb. 26, 1976, Pat. No. 4,040,373, which is a continuation-in-part of Ser. No. 579,896, May 22, 1975, abandoned, which is a continuation-in-part of Ser. No. 566,353, Apr. 9, 1975, Pat. No. 3,995,575, which is a continuation-in-part of Ser. No. 279,714, Aug. 10, 1972, Pat. No. 3,881,438. This application Jan. 19, 1979, Ser. No. 4,718
Int. Cl.³ F42B *19/01*
U.S. Cl. 114—23 **4 Claims**



1. A torpedo operable submerged in water, comprising:
an elongated body;
a pair of elongated vane members positioned substantially alongside said body, each of said vane members having at least a long outwardly flared section operationally projecting away from said body and having an operationally substantially vertically situated mounting section opera-

tionally nearer said body than said outwardly flared section thereof;

mounting means mounting said mounting sections on said body for rotary movement about an operationally substantially horizontal common axis;

at least a portion of said long outwardly flared section of each of said vane members extending substantially in a plane which obliquely intersects said common axis, each of said vane members being rotatable about said common axis and thereby operationally movable into and out of alignment with the flowstream moving rearwardly alongside said body when said torpedo is moving forwardly through the water to concurrently serve steering and heeling functions;

said vane members remaining substantially completely submerged within the water while serving such steering and heeling functions.

4,218,986

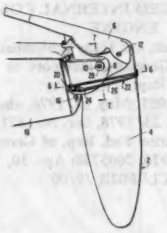
BOAT RUDDER ACCESSORY

John Hackney, 1026 NW. 16th St., Stuart, Fla. 33494

Filed Aug. 2, 1978, Ser. No. 930,427

Int. Cl.[2] B63H *25/06*

U.S. Cl. 114—165 **1 Claim**



1. Means for use with a boat rudder of the kick-up type to assist in retaining the rudder in its fully descended position or in returning it to said position from a kicked-up position which comprises

a U-shaped member having a lug extending laterally therefrom at each side, said lugs being spaced apart sufficiently to enable them to extend beyond the sides of a rudder when said member is positioned behind the aforeside of the rudder,

an elastic band that may be strethced across the aft side of said rudder and fastened to said U-shaped member aft side of said rudder and fastened to said U-shaped member lugs, and

a pair of dish-shaped washers fixed by the rudder hinge bolt at each side of the rudder above said elastic band, said washers acting as stops for said elastic band when the rudder is in a fully kicked-up position.

4,218,987

TORPEDO DETECTION STREAMER

Robert H. Park, Pluckemin, N.J.; Harold W. Klas, Washington, D.C., and Nelson N. Estes, Austin, Tex., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 526,624, Mar. 15, 1944. This application Sep. 30, 1954, Ser. No. 463,081

Int. Cl.[3] B63G *9/02*

U.S. Cl. 114—245 **3 Claims**

1. In a torpedo detecting device of the class disclosed, the combination of a plurality of hose-like sections, means for coupling the sections end to end to form a single streamer, said streamer including means for receiving and retaining air supplied under pressure thereto and a flutter valve for controlling the admission of the air thereinto, said flutter valve comprising a pair of axially aligned tubular members disposed to provide a chamber, and having axially aligned openings at the opposite ends thereof, a cylinder disposed therein to be movable between the openings in said chamber and in response to a predetermined difference in pressure on opposite sides thereof to shut off the air supplied to the streamer when the pressure differential between the air supplied under pressure thereto and the air under pressure therein exceeds a predetermined value.

4,218,988

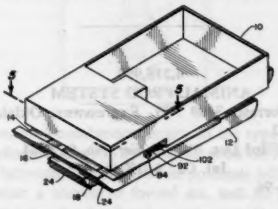
AMPHIBIOUS WALKING VEHICLE

John T. Tucker, 531 Ivywood Dr., Oxnard, Calif. 93030

Filed May 1, 1978, Ser. No. 901,916

Int. Cl.[2] B60F *3/00*; B62D *57/02*

U.S. Cl. 440—113 **10 Claims**



1. An amphibious walking transport system comprising:

a deck body;

a pair of outboard pontoons;

a center inboard pontoon;

pivot means for pivoting the inboard pontoon at a predetermined angle to the right or left of the outboard pontoons whereby the transport may be steered;

support means supporting said deck body on the inboard and outboard pontoons;

synchronizing means for continuously moving said deck body forward alternately on the respective stationary inboard pontoon or outboard pontoons, whereby said deck body moves forward at constant speed.

4,218,989

APPARATUS FOR APPLYING REFRACTORY MATERIAL ONTO THE INNER SURFACE OF A FURNACE UNDER MONITORING BY A TV CAMERA

Masayuki Fujita; Sueki Kubo, and Yasuo Nakamura, all of Kitakyushu, Japan, assignors to Kurosaki Refractories Co., Ltd., Kitakyushu, Japan

Filed Nov. 28, 1978, Ser. No. 964,311

Claims priority, application Japan, Dec. 8, 1977, 52/148001

Int. Cl.[2] B05C *7/02*; H04N *7/02*

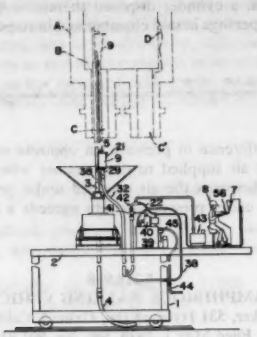
U.S. Cl. 118—713 **7 Claims**

1. In an apparatus for applying refractory material onto the inner surface of a furnace under monitoring by a TV camera comprising at least one elongated spray pipe having a spray outlet at the front extremity thereof, the improvement being characterized in that said apparatus further has a TV camera system which comprises:

(a) a TV camera mounted on said spray pipe adjacent to said spray outlet, said TV camera being encased in an insulated camera box,

(b) a light passing member attached to the front of said camera box enabling said TV camera to receive an image

of an eroded portion of said inner surface of said furnace, and



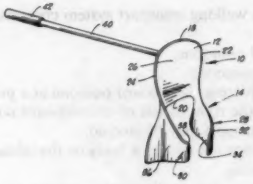
(c) a monitoring device located outside of said furnace for receiving image signals from said TV camera and converting said image signals to said image of said eroded portion.

4,218,990

ANIMAL PROD SYSTEM

William J. Forrest, 3400 NW. Expressway, Oklahoma City, Okla. 73112

Filed Dec. 8, 1978, Ser. No. 967,861
Int. Cl.[3] A01K *29/00*
U.S. Cl. 119—96 **7 Claims**



1. An animal prod, comprising:

a base having an upper end, a lower end, a first side and a second side and being shaped to engage a portion of an animal's hindquarter in an operating position of the animal prod;

a left thigh engaging extension connected to the base generally near the first side and generally near the lower end of the base and extending a distance from the base, a portion of the left thigh engaging extension being shaped to engage a portion of the animal's left hind leg generally near the animal's inside thigh and generally near the animal's hindquarter in an operating position of the animal prod with the base engaging a portion of the animal's hindquarter;

a right thigh engaging extension connected to the base generally near the second side and generally near the lower end of the base and extending a distance from the base, a portion of the right thigh engaging extension being shaped to engage a portion of the animal's right hind leg generally near the animal's inside thigh and generally near the animal's hindquarter in an operating position of the animal prod with the base engaging a portion of the animal's hindquarter; and

means for holdingly supporting the base and the left and the right thigh engaging extensions connected thereto.

4,218,991

PET COLLAR

Edwin L. Cole, P.O. Box 135, Eugene, Oreg. 97401

Filed Jul. 28, 1978, Ser. No. 928,955
Int. Cl.[2] A01K *27/00*
U.S. Cl. 119—106 **5 Claims**

1. In combination,

a pet collar,

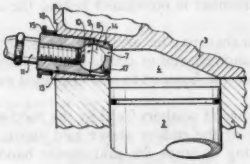
an elongate flexible retainer secured to the inner side of said collar and having a main body portion of flexible material defining a channel and having lengthwise orientated resilient flanges for retentive engagement with an insecticide bearing strip disposed in said channel and between said flanges, said flanges being of a flexible nature to facilitate release of said strip for removal and replacement of said strip.

4,218,992

EXTERNALLY IGNITED INTERNAL COMBUSTION ENGINE

Reinhard Latsch, Vaihingen, and Hans Schlembach, Mühlacker, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Division of Ser. No. 688,051, May 19, 1976, abandoned. This application Jan. 23, 1978, Ser. No. 871,577
Claims priority, application Fed. Rep. of Germany, May 22, 1975, 2522577; Feb. 13, 1976, 2605738; Apr. 10, 1976, 2615813
Int. Cl.[2] F02B *19/00*
U.S. Cl. 123—263 **13 Claims**



1. In an internal combustion engine which includes a housing, means in said housing defining a main combustion chamber, means for generating a combustible vapor mixture and means for admitting said combustible vapor mixture to said main combustion chamber, the improvement comprising: an ignition chamber defined within said housing and having an arcuately shaped side wall, said ignition chamber being disposed separate from said main combustion chamber and communicating therefrom through two oppositely disposed channels arranged tangentially with respect to said arcuately shaped side wall which terminate in said ignition chamber in such a manner that the flow of combustible vapor from said main combustion chamber into said ignition chamber generates therein two vortices rotating in opposite directions; said main combustion chamber having a minimum volume at the top of the compression cycle which is at least 5 times as great and preferably 10 to 25 times as great as the volume of said ignition chamber; said channels having a flow cross section of between

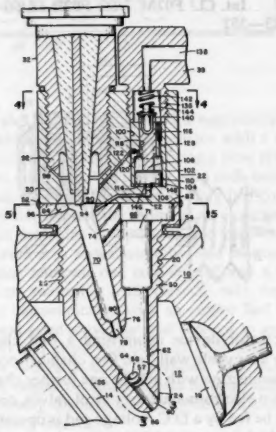
0.1 to 0.4 and preferably between 0.15 to 0.3 of the cross-sectional area of said ignition chamber; whereby the passage of said vapor mixture into said ignition chamber along said ignition chamber side wall creates therein a vortex flow of homogeneous vapor without supplementary fuel admission to said chamber and without charge stratification.

4,218,993

METHOD AND APPARATUS FOR ACCOMPLISHING FLAME IGNITION FOR AN INTERNAL COMBUSTION ENGINE

Donald E. Blackburn, 1073 W. Outer Dr., Oak Ridge, Tenn. 37830

Filed Mar. 14, 1979, Ser. No. 20,542
Int. Cl.[2] F02B *19/10*
U.S. Cl. 123—256 **5 Claims**



1. In a method for igniting the base air-fuel mixture of an internal combustion engine comprising the steps of

connecting primary and secondary chambers in serial fluid communication with a cylinder of said engine,

introducing a quantity of said base air-fuel mixture into said chambers,

positioning an electrode end of a spark plug in said primary chamber,

injecting a metered quantity of a highly combustible fuel into said primary chamber once during each operational cycle of said engine to mix with said base mixture therein and develop a fuel enriched mixture therein at a time immediately prior to the development of an arc at said electrode end of said spark plug whereby said arc ignites said mixture of highly combustible fuel and base air-fuel mixture to develop a primary flame,

directing said primary flame along an elongated passageway to said secondary chamber where said flame mixes with said base air-fuel mixture in said chamber to ignite the same and reinforce the flame,

as said primary flame is moved out of said primary chamber through said passageway, introducing additional unburned base air-fuel mixture from said secondary chamber into said passageway at a location intermediate the opposite ends of said passageway to reinforce said primary flame,

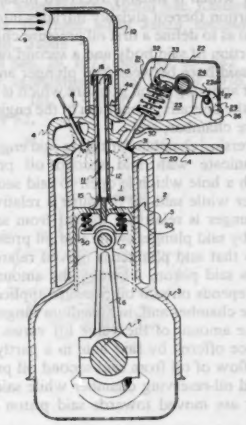
directing said reinforced flame from said secondary chamber into said cylinder in a pattern which provides flame to substantially all regions of said cylinder above a piston contained therein.

4,218,994

FLUID INTAKE AND EXHAUST ASSEMBLIES FOR POSITIVE DISPLACEMENT APPARATUS

Ewell R. Reed, 1551 Oak Knoll, Dallas, Tex. 75208

Filed Dec. 14, 1978, Ser. No. 969,339
Int. Cl.[2] F01L *11/00*
U.S. Cl. 123—47 R **8 Claims**



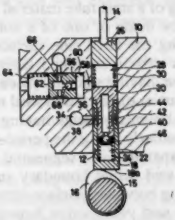
1. In an internal combustion engine of the type including at least one cylinder chamber, a piston mounted for reciprocating movement between first and second positions within said cylinder chamber a source of forced air, and an intake valve assembly for respectively allowing and preventing the entry of said forced air into said chamber, the improvement wherein said intake valve assembly comprises an elongated hollow tube defining an intake port axially extending through said cylinder chamber and in fluid communication with said source of forced air and said chamber; and means operatively coupling said hollow tube with said piston so that when said piston reciprocates between its first and second position, the piston and tube are positioned respectively into and out of engagement with one another, thereby to alternately close off and open said intake port.

4,218,995

HYDRAULIC VALVE LIFTER MECHANISM FOR INTERNAL COMBUSTION ENGINE

Syunichi Aoyama, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sep. 20, 1978, Ser. No. 944,137
Claims priority, application Japan, Sep. 21, 1977, 52-113537
Int. Cl.[2] F01L *1/34, 1/24*
U.S. Cl. 123—90.55 **11 Claims**



1. In a valve train for an internal combustion engine, having a lobed cam mounted on a camshaft and a push rod linked with

a valve to be intermittently opened according to the rotation of the cam, a hydraulic valve lifter mechanism comprising:

a hollow cylindrical body which has an open end and a closed end and is slidably received in a bore formed through an engine block such that said closed ends keeps sliding contact with said cam;

a piston connected to said push rod and slidably received in an end portion of said bore;

a plunger which is slidably received in said bore and in an end portion thereof slidably intrudes into said cylindrical body so as to define a first oil pressure chamber in a closed end portion of said body and a second oil pressure chamber in said bore between said plunger and said piston;

means for applying an oil pressure which is variable depending on the operating condition of the engine to said first oil pressure chamber; and

an oil-reversing chamber formed in said engine block so as to communicate with said second oil pressure chamber through a hole which is open to said second oil pressure chamber while said oil pressure is relatively low so that said plunger is relatively distant from said piston but is closed by said plunger while said oil pressure is relatively high so that said plunger is moved relative to said body towards said piston, whereby the amount of lift of said valve depends on said oil pressure applied to said first oil pressure chamber and, in a medium range of said oil pressure, the amount of the valve lift varies depending on a resistance offered by said hole in a partly closed state to the outflow of oil from said second oil pressure chamber into said oil-reserving chamber while said body and said plunger are moved towards said piston by the rotating cam.

4,218,996

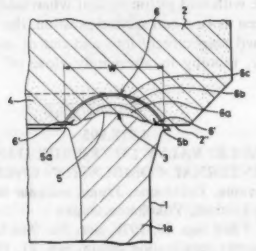
VALVE MOVING PUSH ROD FOR INTERNAL COMBUSTION ENGINES AND METHOD OF MAKING THE SAME

Masayoshi Usui, Numazu, Japan, assignor to Usui Kokusai Sangyo Kabushiki Kaisha, Sunto, Japan

Filed Sep. 20, 1978, Ser. No. 944,018

Int. Cl.³ F01L *1/14*

U.S. Cl. 123—90.61 **1 Claim**



1. An improved valve moving push rod for internal combustion engines consisting of a steel tube material and an end piece having the end surface made of one of a concave or convex arcuate surface, having the fixed side surface made of a flat surface and having a carbon-hardened layer formed on the peripheral wall surface, having said end piece welded by electric resistance to at least one end of said steel tube material and having a cotransition boundary range having a fusing boundary surface formed annularly along the periphery of the port at the end of the tube, expanding in a segmental section into said hardened layer from said fusing boundary surface and made annular along the fusing boundary surface formed on said fixed side surface, wherein said cotransition boundary range comprises a first layer consisting of an α-martensite structure, a second layer consisting of a mixed structure of the α-martensite and a primary truestite structure and a third layer consisting of a secondary truestite structure, said first layer being formed contiguous with an intermediate portion of said fusing boundary surface, said second and third layers being respectively arcuated, to be contiguous with and superimposed over the first layer, said layers being annularly formed along the fusing boundary surface with the extent of the cotransition boundary range, toward both inside and outside of the tube being limited to be within the fusing boundary surface whereby both the inside and outside ends of the second layer are fused directly to said fusing boundary surface.

4,218,997

ACTUATOR DEVICES

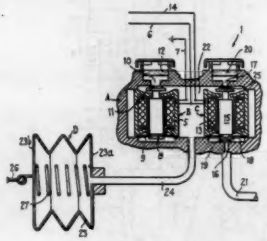
Norman Hunt, Leamington Spa, England, assignor to Associated Engineering Limited, Warwickshire, England

Filed May 4, 1978, Ser. No. 902,592

Claims priority, application United Kingdom, May 4, 1977, 18747/77; Nov. 17, 1977, 47992/77

Int. Cl.² F02M *7/00;* **F02B** *33/00*

U.S. Cl. 123—352 **8 Claims**



1. An actuator device comprising a first chamber partly bounded by a movable wall, said first chamber communicating through a connection with at least one further chamber associated with two electro-magnetic control valves, one of which is arranged to be fed by a D.C. voltage and is operable to control an orifice which is connectable to atmosphere, and the other of which is arranged to be fed both by said D.C. voltage and by a pulse voltage and is operable to control both an orifice which is connectable to atmosphere and an orifice which is connectable to a source of gas at sub-atmospheric pressure.

4,218,998

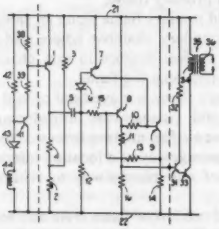
SPARK IGNITION SYSTEMS FOR INTERNAL COMBUSTION ENGINES

William F. Hill, Stafford, and George Gol, Sutton Coldfield, both of England, assignors to Lucas Industries Limited, Birmingham, England

Filed Jul. 6, 1978, Ser. No. 922,400

Int. Cl.³ F02P *9/00;* **F02B** *77/08*

U.S. Cl. 123—335 **3 Claims**



1. A spark ignition system for an internal combustion engine

including common control means for inhibiting the production of sparks if the rotational speed of the engine is above a set value which is decreased progressively with increasing engine temperature, or the engine temperature is above a predetermined value, irresponsive of engine speed.

4,218,999

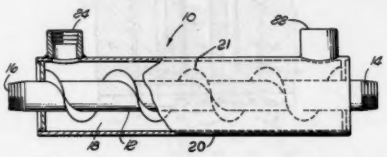
INLINE FUEL HEATER

Kenneth O. Shearer, P.O. Box 727, Creston, Calif. 93432

Filed Sep. 9, 1977, Ser. No. 831,748

Int. Cl.² F02M *31/00*

U.S. Cl. 123—546 **2 Claims**



1. A fuel heater adapted for use with a watercooled combustion engine having a flow through radiator with a water inlet and a water outlet, said heater comprising a flow through tube having an inlet end and an outlet end, said ends being adapted to be communicated with an engine cooling line communicating with the water inlet of the radiator, an elongated housing disposed about said tube inwardly of said ends to define an enclosed jacketed area about said tube, said housing having a fuel inlet means adjacent one end thereof and a fuel outlet means adjacent the other end thereof, said means being adapted to be communicated with an engine fuel line, and a flighting of heat conductive material secured to and helically disposed about and along said flow through tube within said jacketed area whereby upon operating said engine water heated by said engine is caused to pass through said tube heating the fuel passing through said jacketed area and about said tube and flighting therein.

4,219,000

CONTROL DEVICE FOR SELECTABLE SPEEDS IN INTERNAL COMBUSTION ENGINES

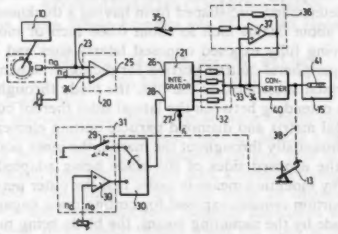
Johannes Locher, Stuttgart, and Helmut Domann, Leonberg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 6, 1978, Ser. No. 894,211

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1977, 2715408

Int. Cl.² F02D *1/12*; B60K *31/00*

U.S. Cl. 123—357 **21 Claims**



1. In a control device for internal combustion engines, the improvement comprising: an integrator; and means for switching the integrator out of its operative state whenever the engine speed is outside of a selected speed range, said control device serving to maintain its final control state intact whenever the integrator is switched out of its operative state.

4,219,001

METHOD AND APPARATUS FOR ACCUMULATING FUEL PARTICLES IN A PORTION OF A COMBUSTION CHAMBER

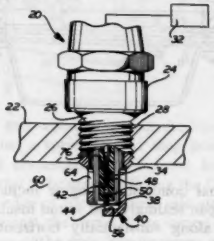
Seiichiro Kumagai, Koishikawa; Michio Abe, Kasugai Aichi, and Naoyuki Maeda, Inuyama, all of Japan, assignors to Tokai TRW & Co. Ltd., Japan

Filed Sep. 29, 1977, Ser. No. 837,842

Claims priority, application Japan, Sep. 30, 1976, 51-117593

Int. Cl.² F02P *13/00*

U.S. Cl. 123—169 EL **32 Claims**



1. A method of accumulating fuel particles in a portion of a combustion chamber, said method comprising the steps of establishing a first electrostatic field across a first electrode gap located in said portion of the combustion chamber, maintaining the atmosphere in the first electrode gap separate from the atmosphere in the combustion chamber, electrostatically attracting fuel particles in the combustion chamber toward the first electrode gap under the influence of electrostatic forces resulting from the first electrostatic field, establishing a second electrostatic field across a second electrode gap located in said portion of the combustion chamber and exposed to the atmosphere in the combustion chamber, and electrostatically attracting fuel particles in the combustion chamber toward the second gap under the influence of electrostatic forces resulting from the first electrostatic field.

9. An apparatus for use in electrostatically accumulating fuel particles in a portion of a combustion chamber, said apparatus comprising a first electrode surface area disposed in said portion of the combustion chamber, a second electrode spaced from and electrically insulated from said first electrode surface area and disposed in said portion of the combustion chamber, said second electrode having a first surface area which cooperates with said first electrode surface area to define a first electrode gap, wall means disposed in said portion of the combustion chamber and enclosing said first electrode surface area and said first surface area of said second electrode for maintaining the atmosphere in said first electrode gap separate from the atmosphere in the combustion chamber, said second electrode having a second surface area exposed to the atmosphere in the combustion chamber, a third electrode surface area exposed to the atmosphere in the combustion chamber, said third electrode surface area cooperating with said second surface area of said second electrode to define a second electrode gap, and means for establishing a first electrostatic field in said portion of the combustion chamber by establishing an electrical potential across said first electrode gap and for establishing a second electrostatic field in said portion of the combustion chamber by establishing an electrical potential across said second electrode gap to electrostatically attract fuel particles to said portion of the combustion chamber under the influence of said first and second electrostatic fields.

4,219,002
SOUND INSULATED INTERNAL COMBUSTION ENGINE

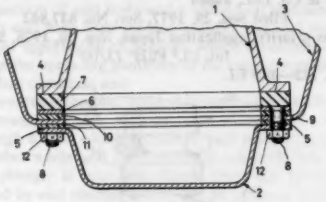
Hermann Danckert, and Michael Willmann, both of Wolfsburg, Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Oct. 18, 1978, Ser. No. 952,445

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1977, 2746740

Int. Cl.³ F02B 77/00

U.S. Cl. 123—198 E **6 Claims**



1. In an internal combustion engine including an engine block and an oil pan sealingly and sound insulatingly secured to one another along substantially horizontally extending mounting faces to constitute a unit and a sound-insulating capsule shrouding the engine block and having a lower terminal zone; the improvement wherein said lower terminal zone of said capsule is constituted by a flange situated between the mounting face of said engine block and the mounting face of said oil pan and further comprising sound dampening mounting means for attaching said lower terminal zone of said capsule to said unit at the height lever of said mounting faces and further wherein said sound dampening mounting means includes

(a) at least one sound dampening intermediate layer situated between said flange and said mounting face of said engine block;

(b) a carrier ring positioned between said intermediate layer and said flange; and

(c) a plurality of securing bolts extending through aligned openings in said carrier ring, said flange and said mounting face of said oil pan.

4,219,003
IGNITION MEANS FOR ROTARY PISTON ENGINES

Haruhiko Sato; Masao Shibagaki, and Tadakazu Ueda, all of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

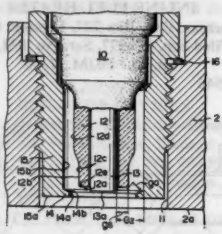
Filed Sep. 12, 1978, Ser. No. 941,591

Claims priority, application Japan, Sep. 16, 1977, 52-112003; Sep. 22, 1977, 52-114150; Sep. 30, 1977, 52-118386; Oct. 15, 1977, 52-123872

Int. Cl.² F02B 53/12

U.S. Cl. 123—210 **4 Claims**

1. A rotary piston engine comprising a casing which includes a rotor housing having a trochoidal inner wall surface and a pair of side housings attached to the opposite sides of the rotor housing; a substantially polygonal rotor disposed in the casing for rotation with apex portions in sliding contact with the inner wall surface of the rotor housing; ignition means which comprises an ignition plug comprised of a central electrode, an insulator disposed around the central electrode and having an end surface which provides a surface gap for creeping discharge, an outer conductor provided around the insulator, and an outer electrode provided on said outer conductor at an end adjacent to the end surface of the insulator so as to project radially inwardly from said outer conductor to be positioned around the insulator with an air-gap between said outer electrode and the insulator; said air-gap being contiguous with said surface gap to provide a discharge end together with said surface gap, said discharge end being located adjacent to the inner wall surface of the rotor housing, said outer electrode having an end surface which projects axially beyond the end surface of the insulator by a distance not exceeding 3 mm, said outer electrode having an axially and radially inwardly extending inner end located axially outwardly beyond the end surface of the insulator by a distance between 0 and 1.5 mm, said outer



electrode being formed for facilitating scavenging of the space between the insulator and the outer conductor with radially extending slit means which comprises a plurality of slits having radially inward openings, each of which is not less than 2 mm in width, the sum of the widths of the radially inward openings being 28 to 70% of the circumferential length of a circle having a diameter equal to the distance between the inner periphery of the outer electrode and the center of the central electrode.

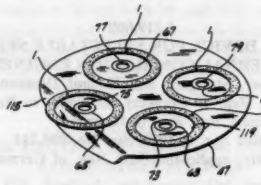
4,219,004
FLEXIBLE, SELF-SUPPORTING BLADE FOR CUTTING ELECTRONIC CRYSTALS AND SUBSTRATES OR THE LIKE

Robert C. Runyon, St. Louis County, Mo., assignor to Chemet Research, Inc., Addison, Tex.

Division of Ser. No. 825,587, Aug. 18, 1977, abandoned. This application Nov. 20, 1978, Ser. No. 961,946

Int. Cl.³ B28D 1/04

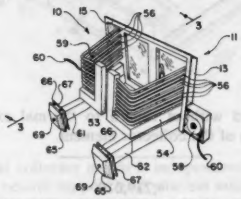
U.S. Cl. 125—15 **18 Claims**



1. An extremely thin flexible, self-supporting cutting blade of a predetermined disc-shaped form having a thickness in the range of about 0.0006 inch to about 0.006 inch or more, the blade having fully exposed opposed lateral sizes and a fully exposed peripheral cutting portion for dicing or sawing electronic crystal substrates, or the like, the blade throughout its thickness extending between the lateral sides thereof comprising a metal matrix and diamond particle cutting elements disposed substantially throughout the matrix, the inner portion of each of the exposed sides of the blade being adapted to be engaged by mounting means in order that the outer peripheral cutting portion remains exposed for cutting upon engagement of the blade by the mounting means, the blade being made by electrodeposition of a matrix of metal as an extremely thin layer of metal in the predetermined disc-shaped form upon a surface of a flat, electrically conductive substrate immersed in a suspension having the diamond particle cutting elements dispersed within an electrolyte, the diamond particle cutting

elements being codeposited in the matrix of metal during electrodeposition thereof, the matrix being separated from the substrate after formation of the metal matrix with the diamond particle cutting elements disposed therein, thereby providing the extremely thin flexible self-supporting cutting blade.

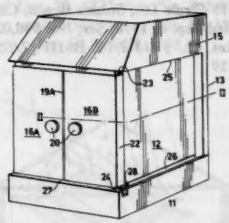
4,219,005
FIREPLACE HEATING UNIT
Alfred Boahn, Rte. 5, Box 361-G, Fayetteville, N.C. 28301
Filed Mar. 6, 1978, Ser. No. 883,535
Int. Cl.[2] F24B *7/00*
U.S. Cl. 126—121 **9 Claims**



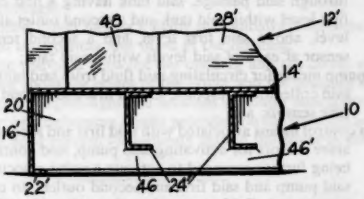
1. A fireplace type heat exchange unit comprising: in a single integral unit, a shroud constructed of heavy duty steel disposed adjacent a pre-existing fireplace opening in general air tight relationship therewith; a rearwardly extending heat exchange manifold secured to said shroud; an opening through said shroud communicating from the exterior thereof to the interior of said manifold; a plurality of heat exchange means communicatively secured at one end to the rear portion of the said manifold and extending to and communicating through said shroud at their opposite ends; an exterior ambient air inlet manifold disposed adjacent said heat exchange manifold and extending outwardly through said fireplace with one end of said inlet manifold opening to ambient exterior air and the other end being connected to said shroud, and opening from said air inlet manifold into the fireplace rearwardly of said shroud; securing means connectingly associated with the ambient air end of said air inlet manifold for retainingly securing said integral heat exchange unit within said fireplace; a generally air tight closure means hingedly secured to said shroud and including dog type locking means operatively associated therewith whereby ambient interior air is prevented from entering said fireplace, supporting air for fire combustion being supplied by exterior ambient air from the exterior ambient air inlet manifold; and blower means operatively connected to said opening in said shroud communicating to the interior of said heat exchange manifold whereby ambient interior air can be forced through the heat exchange manifold, the heat exchange means, and back out to heat said interior when a fire is burning in said fireplace.

4,219,006
STOVE-HEARTH COMBINATIONS
Arnfinn Nesje, Simon Leinums veg 17, N-7080 Heimdal, Norway
Filed Feb. 24, 1978, Ser. No. 881,041
Int. Cl.[2] F24M *7/00*
U.S. Cl. 126—192 **2 Claims**

1. A self-contained, dual purpose stove-hearth combination which comprises a combustion chamber having a base, a rear wall, a pair of side walls supported on said base in opposing relation and joined by said rear wall, a cover defining with said base and front edges of said side walls an opening to said chamber and two doors each hingedly associated with upper and lower pivot means which when the door is in a closed position are disposed adjacent but outside a respective side wall front edge, said side walls each being formed along upper and lower side edges thereof with corresponding upper and lower parallel grooves adapted to be engaged slidably by said upper and lower pivot means which as the door is opened on passage from a stove-forming to a hearth-forming position are displaced along said parallel grooves causing the door to be led gradually along the outer side of its respective side wall to occupy a recess for storage of said door defined by said side wall, said base, said rear wall and said cover with its external door face remaining exposed to view and the length of the grooves being substantially equal to the breadth of their respective door, and wherein at least the lower of the parallel grooves contains a spring-loaded stop positioned when the door is closed immediately behind the lower pivot means enabling the latter to be arrested facing the foremost portion of the lower side edge of the side wall, said stop being manually displaceable against the force of its spring-loading to permit the displacement of the door into its recess-occupying position and then releasable into its former active stop position.



4,219,007
COMBINATION HEARTH AND FIREWALL
Stanley A. Peickert, and Robert C. Peickert, both of P.O. Box 452, The Dalles, Oreg. 97058
Filed May 18, 1978, Ser. No. 907,161
Int. Cl.[3] F24C *15/08*
U.S. Cl. 126—279 **8 Claims**



1. A combination hearth and firewall structure arranged to add to the attractiveness of a room and also to insulate a stove from the floor and room walls, said structure comprising
(a) a base portion arranged to be seated on the floor and having front and rearward ends,
(b) said base portion including a top wall for supporting a stove and also including downwardly extending support means including side walls for supporting said top wall above the floor forming an insulating air space under said top wall, said side walls including an air opening in the forward portion of said base portion and said top wall having an air opening at its rear,
(c) an upright firewall portion supported on said base portion,
(d) said firewall portion including a front wall and rearwardly extending side walls forming an insulating air space between said front wall and a room wall and said firewall portion having an air outlet opening in its upper extremity,
(e) means attaching said firewall portion in its upright supported position on said base portion adjacent to the rearward end of said base portion,

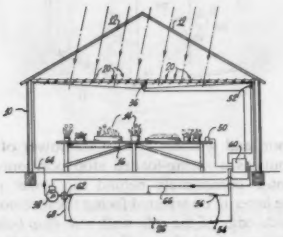
(f) said air openings in said side walls and firewall, portion being in communication for forming a continuous flow path for cooling air extending through both the base portion and said firewall portion.

4,219,008

METHOD AND APPARATUS FOR SOLAR HEATING AND SHADING

John Schultz, 615 Circle Dr., Solana Beach, Calif. 92075

Filed Sep. 6, 1978, Ser. No. 940,027
Int. Cl.[3] F24J *3/02*; B61D *27/00*
U.S. Cl. 126—419 **2 Claims**



2. An apparatus for controlling temperature and sunlight within a structure having a transparent wall, said apparatus comprising:

a movable solar energy collector including a collector surface and a fluid passage;

a light sensor and a first temperature sensor within said structure;

means for moving said collector in response to said light sensor thereby increasing or decreasing the amount of light admitted into said structure through said wall;

a subterranean tank for storing a fluid to be circulated through said passage, said tank having a first outlet at a first level within said tank and a second outlet at a second level, above said first level, and a second temperature sensor at each of said levels within said tank;

pump means for circulating said fluid from said tank through said collector in response to said first and second temperature sensors; and

a control means associated with said first and second temperature sensors for activating said pump, said control means being further arranged to activate a valve associated with said pump and said first and second outlets, to cause low temperature fluid to circulate through said collectors in response to a high temperature measured by said first temperature sensor, and to cause high temperature fluid to circulate through said collector in response to a low temperature measured by said first temperature sensor.

4,219,009

VENTED SOLAR PANEL

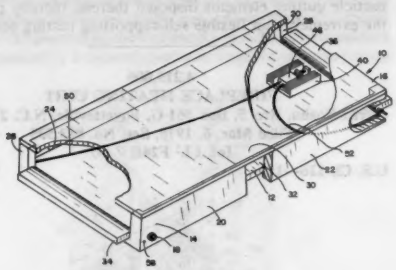
David W. Palmer, 109 Phillips Ave., Rockport, Mass. 01966

Filed Aug. 21, 1978, Ser. No. 935,547
Int. Cl.[2] F24J *3/02*; F24F *7/00*
U.S. Cl. 126—422 **39 Claims**

1. In a solar panel of the type having a collector element, working fluid conduit means in heat transfer relation thereto, a cover spaced from the element and defining an air plenum adjacent to the element, and gates at opposite ends of the plenum movable between first positions closing the plenum and second positions venting the plenum, the improvement in venting means comprising:

a wax thermal actuator in thermal transfer relation to the element; and

force-transmitting linkage means between the actuator and each of the gates for moving the gates between said first and second positions, the linkage means including slack to accommodate changes in the distances between the actuator and the gates, whereby the gates are operable simultaneously and without regard to thermal expansion and contraction of the collector element.

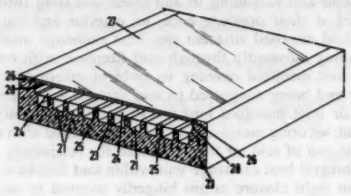


4,219,010

METHOD AND APPARATUS FOR UTILIZING SOLAR HEAT

Joannes M. Van Heel, Rotterdam, Netherlands, assignor to Stichting Bouwcentrum, Rotterdam, Netherlands

Filed Feb. 18, 1977, Ser. No. 769,947
Claims priority, application Netherlands, Feb. 19, 1976, 7601677; Apr. 12, 1976, 7603857; Aug. 11, 1976, 7608916
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—430 **4 Claims**



1. A combined solar heat collector and storage unit comprising:

a heat storage concrete slab medium having an outer surface portion;

a number of metal tubes embedded in spaced relationship in said medium, each of said metal tubes being adpated to pass therethrough a heat transporting medium and including a wall portion disposed exteriorly of a corresponding section of said outer surface; and

a heat collecting surface comprising said wall portions of said number of metal tubes and the sections of said outer surface situated therebetween.

4,219,011

MODULAR SOLAR ENERGY COLLECTOR SYSTEMS

Stellan Knoos, Rancho Palos Verdes, Calif., assignor to AGA Aktiebolag, Lidingo, Sweden

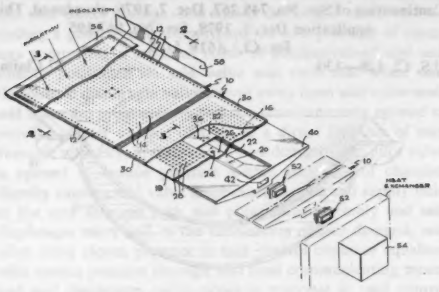
Filed Dec. 1, 1977, Ser. No. 856,256
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—444 **19 Claims**

1. A modular solar energy collection panel comprising:

areal collector means having a pair of coextensive, closely spaced apart and substantially parallel panels providing a principal fluid flow path therebetween, and further including centrally disposed manifold means disposed on the opposite side from the panel face that is to receive solar radiation;

conduit means disposed adjacent to said manifold means and coupled to receive heated fluid therefrom; and

support means coupled to a central portion of said collector means in the region of said manifold means,



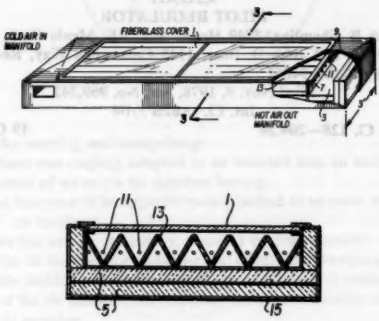
wherein said collector means is independently cantilevered from the central support, and wherein said system further includes insulation means disposed adjacent the rear face of said collector means, and wherein said collector means is free to expand in response to temperature relative to said insulation means.

4,219,012

SOLAR HEATING WITH AIR TRANSFER

Bernard J. Bergen, Vinton, Iowa, assignor to Addison Products Company, Addison, Mich.

Filed Mar. 5, 1976, Ser. No. 664,079
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—449 **17 Claims**



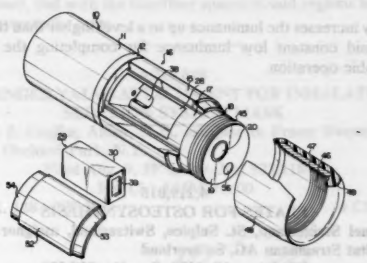
1. A solar heat collector comprising a heat-insulative enclosure including at least one surface area transparent to sunlight, material in zig-zag configuration in cross section as viewed from said ducts, said zig-zag material being spaced from said transparent area and absorbent to sunlight such that sunlight absorbed is transformed into heat energy, ducts extending across opposite sides of said collector, a plurality of holes of the same general size, said holes being small relative to the size of said ducts in each said ducts communicating with the interior of said collector from said ducts; neither said material or any other structure in said collector blocking free flow of air through said holes, across the vicinity of said material, and out of the other holes, the cross-sectional area of said ducts throughout the length of said ducts as viewed from the side being at least in the order of magnitude of thirty times the cross-sectional area of one of said holes as viewed from the side of said holes, said ducts extending to the side of said collector for communication with air under pressure from without said collector.

4,219,013

FORWARD VIEWING ENDOSCOPE WITH SPECIFIC COVER FOR PHOTOGRAPHIC CASSETTE OPENING

Takesh: Okada, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 30, 1977, Ser. No. 865,883
Claims priority, application Japan, Jan. 19, 1977, 52-5145[U]
Int. Cl.[2] A61B *1/04*
U.S. Cl. 128—4 **4 Claims**



1. A forward viewing type endoscope including a head portion which comprises:

a head body having a forward end portion;

an optical system provided in the head body;

a film cassette chamber formed behind the optical system in the head body;

an outer tube surrounding the head body;

an opening formed in the outer tube in registration with the film cassette chamber for inserting the film cassette, and removing the film cassette from the film cassette chamber therethrough;

a detachable cover having a shape substantially complementary to the opening and fitted in the opening;

a packing disposed between the opening and the cover extending about the edges of the cover and the opening for effecting a liquid-tight seal between the outer tube and the cover; and tightening means provided on the forward end of the head portion for securely sealing the cover in position.

4,219,014

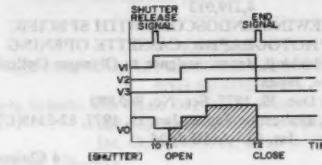
LIGHT SOURCE DEVICE FOR ENDOSCOPE WHICH CONTROLS THE VOLTAGE ACROSS A SINGLE LIGHT SOURCE FOR PERFORMING BOTH ILLUMINATION AND PHOTOGRAPHY

Susumu Oshiro, Iwatsuki, and Morihiko Yoshida, Urawa, both of Japan, assignors to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed Jul. 20, 1977, Ser. No. 817,133
Int. Cl.[2] A61B *1/04*; G03B *29/00*
U.S. Cl. 128—6 **5 Claims**

1. A light source device for an endoscope which is used for both observation and photographing, comprising a light source and a light source control means, said light source control means being connected between a shutter release signal generating means in a camera of the endoscope and said light source, said light source control means including means for generating a constant low voltage output to thereby effect a constant low luminance of the light source when the endoscope is used for observation, said light source control means also including means for generating upon receipt of said shutter release signal from the shutter release signal generating means a voltage output lower than said constant low voltage output which first lowers the luminance of the light source from said constant

low luminance down to a lower but non-zero level until after the shutter is opened and for generating a voltage which gradually increases the luminance up to a level higher than the level of said constant low luminance for completing the photographic operation.



4,219,015

PLATES FOR OSTEOSYNTHESIS

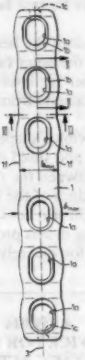
Samuel Steinemann, St. Sulpice, Switzerland, assignor to Institut Straumann AG, Switzerland

Filed Apr. 18, 1978, Ser. No. 897,370

Claims priority, application Switzerland, Apr. 22, 1977, 5011/77

Int. Cl.[2] A61F 5/04; A61B 17/18

U.S. Cl. 128—92 D **15 Claims**



1. An elongate plate for osteosynthesis, comprising at least two means each defining a respective hole for receiving a screw, and a respective hole-free section extending in the longitudinal direction of the plate and separating each neighboring pair of the means defining the holes, a spacing, perpendicular to the longitudinal direction of the plate, between the same two mutually opposite surfaces of at least two of said hole-defining means being greater than that between two mutually opposite surfaces of the hole-free sections, the plate exhibiting at least in the region of the at least two hole-defining means a bending resistance moment $W=I/e$ along a plane extending substantially centrally of the plate in the longitudinal direction of the plate and intersecting substantially perpendicularly that surface of the plate which is intended to rest on a bone, the bending resistance moment $W=I/e$ lying between a lower and an upper limiting value, the lower limiting value being at most 30% smaller than the upper limiting value, wherein I is the area moment of inertia, and e is the maximum value of the distance of the outline bounding the cross-sectional area from a neutral surface of the plate.

4,219,016

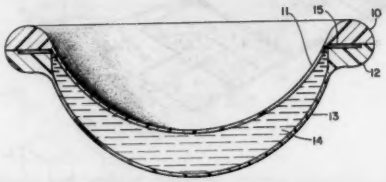
VAGINAL CONTRACEPTIVE

James L. Drobish, and Thomas W. Gougeon, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 748,267, Dec. 7, 1976, abandoned. This application Dec. 7, 1978, Ser. No. 967,195

Int. Cl.[3] A61F 5/46

U.S. Cl. 128—130 **27 Claims**



1. A contraceptive device especially adapted for use within the vaginal cavity at a position posterior to the introitus and with a face in close proximity to the cervical os, characterized by: vaginal retaining means having affixed thereto one or more container having walls, at least a portion of the walls comprising a substantially non-porous, semi-permeable membrane, said containers holding a reservoir of spermicide comprising an aqueous solution of a micelle-forming spermicidal surfactant compound at a concentration at or above the critical micelle concentration of said surfactant compound, said membrane-walled containers being maintained in position in the device by positioning means, thereby providing a transport surface on the face of the device.

4,219,017

PILOT REGULATOR

Ralph B. Shamlian, 3549 Haven Ave. #E, Menlo Park, Calif. 94025, and John D. Burr, 1135 Cedarwood Way, Redwood City, Calif. 94061

Filed Nov. 9, 1978, Ser. No. 959,242

Int. Cl.[2] A62B 7/04

U.S. Cl. 128—204.26 **19 Claims**

1. A breathing apparatus for supplying fluid under pressure to a user on demand and at ambient pressure comprising: a casing; an inlet passage in said casing for receiving fluid under pressure; an outlet passage in said casing for supplying fluid to a user on demand; a valve body within said casing and communicated with said inlet passage; means defining a control chamber within said valve body; an elastomer diaphragm valve at one end of said control chamber segregating said inlet passage from said control chamber; a pilot valve assembly mounted within said control chamber at an end generally opposite said one end; a diaphragm in said casing responsive to user demand; means interconnecting said casing diaphragm and pilot valve

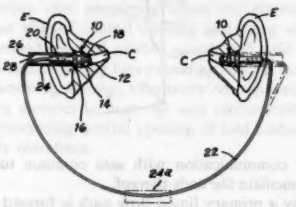
assembly whereby upon user demand sensed by said casing diaphragm said pilot valve is opened; means communicating fluid from said inlet passage to said control chamber; and means defining a valve seat for said diaphragm valve within said control chamber and communicated with said casing and thus said outlet passage, said means defining a valve seat including a predetermined configuration of a plurality of openings comprising a series of bores of predetermined size and number positioned on said valve seat such that when said elastomeric diaphragm valve moves away from said valve seat, said bores are progressively and non-simultaneously opened to provide greater volume of flow as a direct function of user demand, whereby, in response to user demand, said pilot valve is opened to reduce pressure within said control chamber thereby causing said valve diaphragm to open and supply fluid to the user through both said pilot valve assembly and said diaphragm valve and, at the termination of user demand, said pilot valve closes, pressure in said control chamber equalizes with source pressure through said fluid communicating means and said diaphragm valve closes in response to said control chamber pressure and by virtue of its own elastic memory.

4,219,018

EARPLUG UNIT WITH INSERTER AND TIE

Weston E. Draper, Jr., Diamond Bar, Calif., assignor to Norton Company, Worcester, Mass.

Filed Mar. 29, 1979, Ser. No. 24,956
Int. Cl.³ A61F *11/02*
U.S. Cl. 128—152 **7 Claims**



1. An earplug unit comprising:
at least one earplug adapted to be inserted into an auditory canal of an ear; a tie member having
at least one of its opposite ends attached to an outer end of an earplug;
insertion means carried by, retained on and movable along the tie member for engaging and inserting the earplug into the auditory canal; and means, attached to an opposite end of the tie member, for retaining the insertion means on the tie member.

4,219,019

BANDAGE

John T. Coates, Hoffman Estates, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Feb. 7, 1979, Ser. No. 10,102
Int. Cl.³ A61L *15/00*
U.S. Cl. 128—156 **10 Claims**

1. A bandage, comprising:
a tape strip having a pressure-sensitive adhesive on a front surface thereof to secure the bandage on a patient; and
a micrexed absorbent pad comprising a sheet of nonwoven fabric secured on said front surface of the tape strip, said sheet having an inner layer of substantially hydrophilic fibers, and an outwardly facing first surface layer of substantially hydrophobic fibers, said inner and surface layers being bonded together in substantially isolated highly compacted areas defining adjacent regions of substantially less compaction, the layers of said fabric being formed by micrexing into a repeating series of wave-like undulations substantially throughout the dimensions of the fabric, with the interfiber spaces in said areas being substantially closed, and with the interfiber spaces in said regions being substantially open.

4,219,020

SCAVENGER VALVE ATTACHMENT FOR INHALATION SEDATION SYSTEM MASK

Ronald J. Czajka, Alden, N.Y., assignor to Fraser Sweatman, Inc., Orchard Park, N.Y.

Filed Aug. 9, 1978, Ser. No. 932,118
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—207.13 **4 Claims**

1. A mask assembly for administering a gas to be inhaled by an individual including,
a mask body to fit over the nose of said individual, and against the surrounding facial area of said individual,
said mask body terminating in a peripheral surface contoured to fit against the facial area of said individual and when so positioned defining therewith a mask chamber,
said mask body including an inlet port adapted to be operatively connected to a source of gas to be administered to said individual thereby to direct said gas to said mask chamber,
valve means including a valve body member disposed through said mask body in an area of said mask body remote from said contoured peripheral surface, said valve body member including an exhalation valve member movable between a first seated closed position during inhalation of said individual and a second open position during exhalation of said individual,
said valve body member including a first exhaust chamber formed about said exhalation valve member to receive exhalation gas of said individual flowing through said exhalation valve member and a second annular exhaust chamber formed of a pair of substantially frusto-conically shaped members radiating outwardly from said valve body member and spaced from each other to define said second annular exhaust chamber,
means affording fluid communication between said first and second exhaust chambers and an outlet port adapted to be connected to a vacuum source in one of said exhaust chambers thereby to provide a source of vacuum to each said first and second exhaust chambers to exhaust gas exhaled by said individual,
said pair of radiating members defining an area at their terminii, said area being disposed circumferentially and outwardly of said mask body and being located distantly from said periphery surface and the facial area of the said

individual when the mask is in use and being spaced from said inlet port, and

said pair of radiating members having inlet means to said annular exhaust chamber near the outer edge surface of said annular exhaust chamber thereby to establish a suction effect about the whole exterior of said mask body when said mask body is connected to said vacuum source.

4,219,021

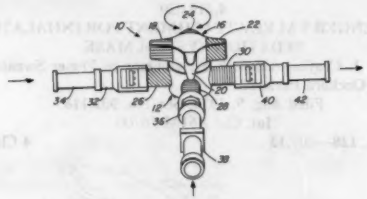
MULTI-POSITION STOP-COCK VALVE FOR INTRAVENOUS ADMINISTRATION OF MULTIPLE MEDICATIONS

Joseph L. Fink, 1761 Seneca La., Las Vegas, Nev. 89109

Filed Feb. 27, 1978, Ser. No. 881,393

Int. Cl.[2] A61M *5/00*

U.S. Cl. 128—214 B **10 Claims**



1. A multi-position valve, comprising

(a) a relatively fixed valve body formed with at least three angularly spaced body passages for feeding fluids to and from said valve, said body having a different distinctive color thereon adjacent each of said passages;

(b) a valve core mounted for relative angular movement in said body and formed with at least three angular spaced core passages adapted to form different flow paths according to the angular position of said core with respect to said valve body;

(c) a handle on said core having at least four radial portions at different angular locations, all but one of said portions corresponding to said core passages;

(d) each of said portions being uniquely and differently colored with respect to the other of said portions whereby flow paths through said valve may be identified by the color relation between said handle portions and said body passages;

(e) at least three of said handle portions being of the same colors as at least three of said body passages whereby flow paths through said valve may be identified by aligning a portion of said handle with a correspondingly colored portion on said body;

(f) the number of radial portions on said handle being one greater than the number of body passages and representing an extra radial portion being distinctly colored with respect to all other portions on said handle and on said body.

4,219,022

EQUIPMENT SETS FOR THE SEQUENTIAL ADMINISTRATION OF MEDICAL LIQUIDS AT DUAL FLOW RATES HAVING PARALLEL SECONDARY LIQUID FLOWPATHS WHEREIN ONE SAID PATH IS CONTROLLED BY A LIQUID SEQUENCING VALVE

Joseph N. Genese, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Feb. 28, 1979, Ser. No. 16,232

Int. Cl.[2] A61M *5/14*

U.S. Cl. 128—214 G **15 Claims**

1. A set for the sequential administration of medical liquids to a patient, comprising:

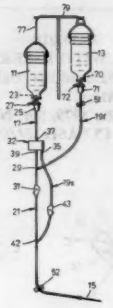
a liquid sequencing valve defined by a housing having a chamber therein, first, second and third pasageways opening into said chamber, and a liquid impermeable valve means normally positioned to close said first passageway to the flow of liquid therethrough, said valve means hydrostatically moveable to a second position to open said first passageway and close said second passageway to the flow of liquid therethrough, and said third passageway open to the flow of liquid therethrough regardless of the position of said valve means,

a primary tube for the flow of a primary medical liquid therethrough having the proximal end in fluid communication with said second passageway,

a first secondary tube for the flow of a secondary medical liquid therethrough having its proximal end in fluid communication with said third passageway,

a common tube having its distal end in fluid communication with the proximal end of said first secondary tube and said third passageway and its proximal end open for the flow of liquid therefrom,

a second secondary tube for the flow of said secondary liquid therethrough having its distal end in fluid communication with said first passageway and its proximal end in



fluid communication with said common tube at a site intermediate the ends thereof,

whereby a primary liquid flow path is formed by said primary tube, said second passageway, said chamber, said third passageway and said common tube and a secondary liquid flow path is formed by a first flow path comprising said first secondary tube and said common tube and a second flow path comprising said first secondary tube, said third passageway, said chamber, said first passageway, said second secondary tube and said common tube,

a first flow control means on said common tube distal to said site intermediate the ends thereof for adjusting the flow rate of primary and secondary liquid flowing therethrough, and

a second flow control means in said second flow path for adjusting the flow rate of secondary liquid flowing therethrough,

whereby said secondary liquid flows through said secondary liquid flow path at a rate controlled by said first and second flow control means and said primary liquid flow through said primary liquid flow path at a rate independent of the flow rate of said secondary liquid.

4,219,023

CONVEX INSERT AND OSTOMY BAG STRUCTURE

Eugene R. Galindo, 2926 Highridge Rd., La Cresenta, Calif. 91214

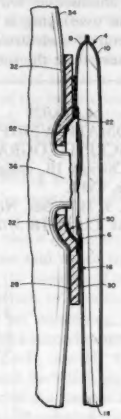
Filed May 23, 1978, Ser. No. 908,746

Int. Cl.[3] A61F *5/44*

U.S. Cl. 128—283 **9 Claims**

1. An ostomy receptacle comprising the combination: a pliable pouch member having enclosing walls and a stoma receiving opening and a drainage opening; a mounting member

having a central opening aligned with such stoma receiving opening and a surface thereof secured to the exterior of said enclosing wall adjacent the stoma opening; a comformable cushion member secured a spaced distance from the periphery of said central opening to the opposite surface of said mounting member and having an aligned, corresponding central opening; and a flexible, convex member of thin-walled material and



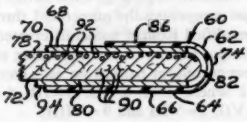
having mounting tabs projecting about the circumference thereof and an aligned central opening and being releasably disposed intermediate said pliable pouch and said cushion member with said mounting tabs extending beyond the periphery of said mounting member alternately on opposite sides of said mounting member to urge the area circumscribing said aligned, corresponding central opening of said cushion member outwardly therefrom.

4,219,024

ABSORBENT ARTICLE

Donald Patience, Barrington, and Hamzeh Karami, Crystal Lake, both of Ill., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 715,784, Aug. 19, 1978, abandoned.
This application Sep. 21, 1978, Ser. No. 944,460
Int. Cl.³ A61F *13/16*
U.S. Cl. 128—287 **9 Claims**



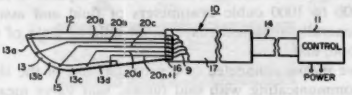
1. An absorbent article for placement against a wearer to capture body fluids, comprising: an absorbent pad comprising a mass of fibers including fibers formed from at least one of a thermomechanically, mechanically, or semichemically produced pulp, and particles of a heat-sensitive plastic material fused to fibers in the pad to increase the integrity and resiliency of the fibrous mass, and sheet means covering a front and back surface of the pad, said plastic particles being only located adjacent the front surface of the pad.

4,219,025

ELECTRICALLY HEATED SURGICAL CUTTING INSTRUMENT

Donald M. Johnson, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Nov. 16, 1978, Ser. No. 961,188
Int. Cl.² A61B *17/38*
U.S. Cl. 128—303.1 **10 Claims**



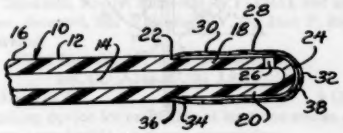
1. A surgical instrument for cutting tissue with simultaneous hemostasis, the instrument comprising: a substrate of electrically insulating material in the form of a blade having a cutting edge, having disposed thereon in the vicinity of the cutting edge an electrically heatable element of electrically conductive material exhibiting a resistance characteristic which varies as a function of the temperature, the heatable element being divided at selected locations into a plurality of independently heatable sections which form segments along said cutting edge and connection means for each segment providing electrical connection to each of said segments at the selected locations, means for independently supplying electrical power thereto along said connection means for maintaining the temperature of each of said segments at substantially constant selected value, said connection means including n+1 conductors for the heatable element wherein n is the number of segments, such that, the connection means for each pair of adjacent segments is shared by a common one of the n+1 conductors; logic means for coupling said means for supplying electrical power to each of said segments over said connection means independent of power supplied to an adjacent segment, such that, each may be heated independently, said logic means including exclusive OR logic for each segment, responsive to a reference polarity signal corresponding to the polarity of the power supplied at one of said connection means for the segment for producing selected outputs, means responsively coupled to the logic means for providing power to the segment in opposite electrical sense to the reference polarity signal for the segment or the same electrical sense to inhibit power thereto.

4,219,026

BLADDER HEMOSTATIC CATHETER

Terry N. Layton, Arlington Heights, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Sep. 15, 1978, Ser. No. 942,523
Int. Cl.³ A61M *25/00*
U.S. Cl. 128—325 **1 Claim**



1. A bladder hemostatic catheter, comprising:
an elongated shaft having only one lumen in the shaft, a central section of a first outer diameter, an annular end section at the distal end of the shaft having a second outer diameter less that the first diameter of said central section, with said end section defining a tip of the shaft, and an opening in said end section communicating between said lumen and the ouside of the shaft;
an inflatable balloon of elastic material covering said end

section of the shaft, said balloon having an annular segment and a closed distal end extending around said tip, with a proximal end of said segment being bonded to the shaft in a circumferential zone adjacent the juncture of said central and end sections of the shaft, said balloon defining a closed cavity intermediate the balloon and end section of the shaft communicating with said opening, with the remainder of the shaft proximal said balloon being closed, and said balloon being capable of receiving 600 to 1000 cubic centimeters of fluid and assuming a generally spherical shape in an inflated state of the balloon; and

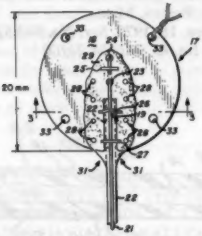
valve means connected to a proximal end of the shaft and communicating with said lumen, said valve means controlling passage of fluid for inflation and deflation of said balloon, said valve means comprising a first known valve member which actuates responsive to contact by the tip of a syringe to permit passage of fluid through the valve means to said shaft lumen and closes responsive to withdrawal of the tip of a syringe, to prevent passage of fluid from said shaft lumen through said valve member, said valve means further comprising a valve assembly insertable into said valve member and having a first passageway communicating with the valve member, a second passageway communicating between said first passageway and a source of fluid, a first one-way valve element in the first passageway permitting passage of fluid from the second passage-way to the valve member and preventing passage of fluid from the valve member to the second passageway, and a second one-way valve element permitting passage of fluid from the source to the first passageway and preventing passage of fluid from the first passageway to the source, whereby upon completed inflation of said balloon through said valve means, said valve assembly may be withdrawn from said valve member and said balloon will remain inflated for a selected period of time, whereafter said valve member may be deflated through actuation of said valve member.

4,219,027

SUBCUTANEOUS ELECTRODE STRUCTURE

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Gordon F. Lund, San Jose, Calif.

Filed Jan. 16, 1979, Ser. No. 3,693
Int. Cl.³ A61B 5/04
U.S. Cl. 128—642 **11 Claims**



1. In a subcutaneous electrode structure:

electrode means including an electrically conductive plate-shaped structure for implanting in electrically conductive relation with subcutaneous tissue of an animal to which an electric connection is to be established;

electrical conductor means including an electrically conductive wire structure for making electrical connection to said electrode means;

said plate-shaped structure including an elongated slot extending into said plate-shaped structure from the periphery thereof, said slot having a peripheral end and an inner end;

said electrical conductor means extending along said slot and over the inner end of said slot and being disposed overlaying said plate-shaped structure, said wire structure being electrically conductively connected to said underlying portion of said plate-shaped structure; and

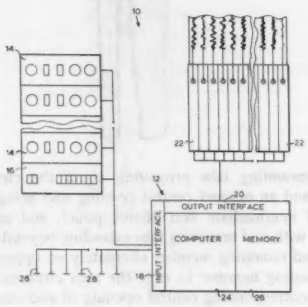
electrical insulative means for enveloping that portion of said electrically conductive wire structure extending along said slot and overlaying at least a portion of said plate-shaped structure for electrically insulating portions of said wire structure from the subcutaneous tissue.

4,219,028

AUTOMATIC VERIFYING ELECTROENCEPHALOGRAPH SYSTEM

Cecil C. Lencioni, Jr., Chicago, Ill., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jan. 9, 1978, Ser. No. 867,727
Int. Cl.³ A61B 5/04
U.S. Cl. 128—731 **14 Claims**



1. In a signal recording apparatus having at least one switch for signal parameter section with a plurality of discrete positions wherein an electrical signal responsive to each of said discrete positions is detected and applied to a recorder having a galvanometer type pen motor to create a permanent recording on a moving medium, the method of indicating the position of the switch at the time of record making to a later observer of the recorded output comprising the steps of:

a. detecting the position of the switch;

b. overriding the output of the detected signal to the pen motor for a period of time; and,

c. outputting a coded signal to the pen motor during the overriding period of time, said coded signal having at least one character of a character set associated with the switch such that a character represents each switch position, said character set comprising the numerals 1 through 9 represented by modified Roman numerals created by combining a first output pattern on said recording representing a V and a second output pattern on said recording representing a I where 1=I, 2=II, 3=III, 4=IIII, 5=V, 6=VI, 7=VII, 8=VIII and 9=VIIII.

11. In an electroencephalograph having a plurality of electrodes for attachment to a patient to detect electrical signals from the patient, a recorder having a plurality of galvanometer type pen motors adapted to provide a permanent record on a moving recording medium in response to received signals, amplifier means for amplifying low level electrical signals detected by the electrodes to a level which will drive the pen motors including parameter setting switches for selecting various parameters associated with the amplification applied to the signal to each pen motor, and switch means for connecting the amplifier means between selected ones of the electrodes and selected ones of the pen motors including combination select-

ing switches for selecting preselected combination assignments of electrodes to pen motors, the improvement comprising:

a. means for sensing the position of the parameter setting and the combination selecting switches;

b. means connected to said sensing means for detecting a change in the position of any one of said switches; and

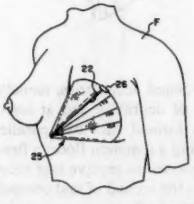
c. means connected to said sensing means and detecting means for overriding the output of the amplified electrical signal to each pen motor and for applying a coded signal to each pen motor during the overriding period which coded signal is indicative of the switch position of said parameter setting switches associated with that pen motor and for applying a coded signal to one of the pen motors which is indicative of the switch position of said combination selecting switch, said overriding and coded signal output means being adapted to override and apply the coded signal in response to a change in the position of one of said parameter setting and said combination selecting switches and includes memory means wherein the numerals 0–9 are defined as a series of d.c. output levels to be applied to the pen motor in sequence during consecutive time periods to cause said coded signal to the pen motor assigned to display the position of said preselected combination selecting switch to produce a modified Roman numeral character set combining a first output pattern representing a V and a second output pattern representing a I where 1=I, 2=II, 3=III, 4=IIII, 5=V, 6=VI, 7=VII, 8=VIII, and 9=VIIII, and first logic means for selecting the series of d.c. output levels of the numerals representing said preselected combination selecting switch position and for applying said defined d.c. output levels in sequence to the pen motor.

4,219,029

FEMALE BREAST VOLUME MEASURING DEVICE

Jack Grossman, and Leonard A. Roudner, both of 505 N. Lake Shore Dr., Chicago, Ill. 60611

Filed Mar. 7, 1979, Ser. No. 18,145
Int. Cl.³ A61B 5/10
U.S. Cl. 128—774 **16 Claims**



1. A device for measuring the volume of a female breast comprising an elongated hollow member of a flexible sheet material adapted to be engaged around and completely enclose a breast whose volume is to be measured, said elongated hollow member being adjustable in circumference to conform the cross-sectional area of the hollow member to a received breast, and having calibrations on a body portion thereof and an indexing means capable of being selectively aligned with a calibration for indicating the volumetric measurement of the breast contained therein.

4,219,030

AERATION GROOVE FILTER

Floyd V. Hall, Durham, N.C., assignor to Liggett Group Inc., Montvale, N.J.

Division of Ser. No. 826,136, Aug. 19, 1977. This application Oct. 26, 1978, Ser. No. 955,046
Int. Cl.³ A24D 3/04
U.S. Cl. 131—10 A **5 Claims**

1. A filter plug having

a body of entrainment-type fibrous filter material,

a layer of plug wrap paper of predetermined thickness circumferentially about said body, and

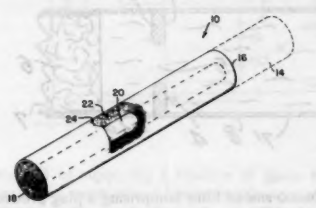
a peripheral annular groove of a depth at least equal to the thickness of said layer of plug wrap paper, said groove extending through said layer of plug wrap paper to communicate the exterior of the filter plug with said body of filter material.

4,219,031

SMOKING PRODUCT HAVING CORE OF FIBRILLAR CARBONIZED MATTER

Norman B. Rainer, and Donald A. Full, both of Richmond, Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Mar. 5, 1979, Ser. No. 17,483
Int. Cl.² A24D 1/04, 3/00
U.S. Cl. 131—10.5 **17 Claims**



1. A smoking article comprising a gas permeable, self-supporting central core separately circumscribed by tobacco, said core consisting essentially of carbonized fibers having a diameter below 0.2 mm.

4,219,032

SMOKING DEVICE

Robert A. Tabatznik, Box 97, Boiceville, N.Y. 12412, and Steven H. Reiner, deceased, late of Bronx, N.Y. (by Jack P. Reiner, administrator)

Filed Nov. 30, 1977, Ser. No. 855,923
Int. Cl.³ A24F 47/00, 1/08
U.S. Cl. 131—170 A **9 Claims**

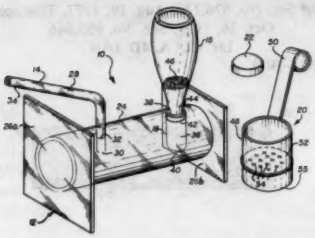
1. A smoking device for extracting at least one smoke component from a smokeable substance, comprising:

a hollow base defining a reservoir, said base having ingress and egress apertures therein;

a bowl defining a space for receiving the smokeable substance, said bowl having two spaced holes therein, means establishing intercommunication between the space and the reservoir through the ingress aperture in the base and one of the holes in the bowl; and

heating means including a perforated container defining a chamber for receiving a combustible substance, the chamber communicating with the space through the other hole

in the bowl, and disposed adjacent the other of the holes in the bowl for elevating the smokeable substance to a



sufficiently high temperature to extract the smoke component through the egress aperture without combusting the smokeable substance.

4,219,033

TOBACCO-SMOKE FILTERS

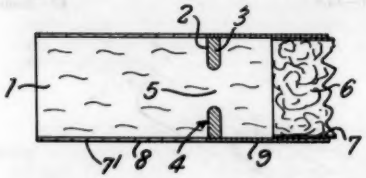
Henry G. Horsewell, Totton; John D. Green; John A. Luke, both of Romsey, all of England, and Stanley M. Candlish, Lachine, Canada, assignors to British-American Tobacco Company Limited, London, England

Filed Oct. 4, 1977, Ser. No. 839,297

Claims priority, application United Kingdom, Oct. 6, 1976, 41533/76

Int. Cl.[2] **A24C** *5/50;* **A24D** *1/02*

U.S. Cl. 131—261 B **8 Claims**



1. A tobacco-smoke filter comprising a plug produced from smoke-pervious fibrous filter material, which material is rendered impervious to the passage of smoke over a transverse cross section of the plug except for a proportion of that cross section of a cross sectional area, not less than 0.8 mm^2, which forms a smoke-accelerating orifice having a perviousness for tobacco smoke which is at least equal to that of the unmodified perviousness of the fibrous material of the plug, and the plug being enclosed by an envelope having means for ingress of air into the plug fibrous material downstream of the orifice.

4,219,034

DOUBLE SET HAIR STYLING ROLLER DEVICE

James Nemish, 419 Mar Lynn Ct., Escondido, Calif. 92025

Continuation-in-part of Ser. No. 807,784, Jun. 20, 1977, abandoned. This application May 30, 1978, Ser. No. 910,679

Int. Cl.[2] **A45D** *24/36*

U.S. Cl. 132—40 **4 Claims**

1. An assembly for use in curling hair comprising:

a larger slotted roller having two elongated crescent-shaped cylinder portions, each having a channel extending substantially along their respective lengths between two parallel edges, and along which edges the portions are joined, said first cylinder portion having a greater diameter than said second cylinder portion, said second portion being secured interiorly of said first portion and having an inner surface defining an elongated slot extending along the length of said slotted roller, and a plurality of ribs or nipples extending radially into said slot from said inner surface, and

a smaller cylindrical roller having an outer diameter less than the inner diameter of said second cylinder portion, and secured in said slot of said second cylinder portion, said ribs or nipples being located along said inner surface,

whereby respective adjacent surfaces of said smaller roller and said inner surface of said larger slotted roller are uniformly spaced apart by said ribs or nipples,

whereby hair rolled on said smaller cylindrical roller is spaced apart from said inner surface by said ribs or nipples and whereby drying time of said hair is substantially reduced.

4,219,035

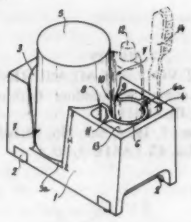
CADDY OR HOLDER FOR DENTAL ACCESSORIES

Didier Deconinck, Isére, France, assignor to Allibert Exploitation, Grenoble, France

Filed Aug. 2, 1978, Ser. No. 930,161

Int. Cl.[2] **A45D** *44/18*

U.S. Cl. 132—84 D **8 Claims**



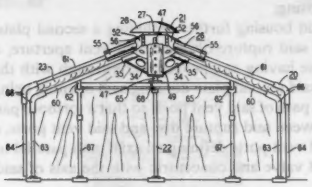
1. A holder for dental accessories, namely a mouth-rinsing receptacle, a tube of dentifrice and at least one toothbrush, comprising a body formed with two parallel upwardly open compartments having a common floor, a first of said compartments being dimensioned to receive said receptacle which can rest upon said floor, the second of said compartments receiving a removable cylindrical tubular insert resting on said floor and having outwardly extending ribs defining in said second compartment a plurality of upwardly open outer chambers adapted to receive the handles of toothbrushes, the interior of said insert defining a central chamber adapted to receive the tube of dentifrice, said compartments communicating between them through a lateral opening in a wall separating said compartments from one another, said insert having a slot-shaped vertical lateral opening registering with the opening in said wall and extending substantially from the top to the bottom of said insert for affording lateral access to said central chamber for withdrawal of said tube of dentifrice.

4,219,036

PORTABLE SHELTER

Joel T. Biggs, 2 Chomic Pl., Union Beach, N.J. 07735

Filed Aug. 31, 1978, Ser. No. 938,699
Int. Cl.[2] A45F *1/16*
U.S. Cl. 135—1 R **10 Claims**



1. A fabric covered shelter comprising:

a support assembly for accepting and holding said fabric covering in a predetermined shelter shape, said support assembly comprising a plurality of support and gate ribs, support and gate legs and connectors for joining said ribs and legs into pairs, all of said legs being disposed vertically to form a hexagon, said gate legs being longer than said support legs and said gate leg and gate rib pairs engaging ends of said fabric to form opposite sides of an opening in said shelter, and

a top unit comprising a vent unit, for venting said shelter a cap unit rigidly holding said support ribs in position, and a hinge unit for rigidly holding and reciprocating said gate ribs between two positions when actuated, said vent unit being disposed vertically with respect to said support assembly, said cap unit being rigidly attached to said vent unit and having a plurality of support rib sockets embracing said support ribs, and said hinge unit being rigidly attached to said vent unit above said cap unit and having a plurality of gate rib sockets for holding said gate ribs at a height above said support ribs whereby said gate ribs will pass over said support ribs when said hinge unit is actuated so as to form a wide opening in said shelter.

4,219,037

PROTECTIVE CRUTCH NUT

Johnnie W. Thompson, Rte. 3, Box 263, Pelzer, S.C. 29669

Filed May 9, 1978, Ser. No. 904,200
Int. Cl.[2] A45B *9/00*; F16B *37/00*
U.S. Cl. 135—69 **4 Claims**

1. In a crutch-frame assembly for supporting the weight of a patient, a protective crutch nut for fastening the adjusting bolts of a leg of the crutch frame comprising:

a rounded nut head having a smooth rounded exterior surface affording protection against snagging, said rounded exterior surface terminating at a peripheral edge;

a pair of diametrically opposed tab portions defined by extensions of said rounded surface of said head extending past said peripheral edge;

said tab portions being spaced about said peripheral edge to define an open space therebetween for receiving said crutch frame leg;

said tab portion having a smooth rounded edge portion blended with the peripheral edge of said nut head;

said tab portions engaging opposing outer sides of said leg of said crutch frame interlocking therewith; and

said nut head further including a planar load-bearing surface coextending between said pair of tab portions and said peripheral edge of said head providing an enlarged surface for bearing against the exterior surface of said crutch frame leg affording a reduced unit force against said frame leg,

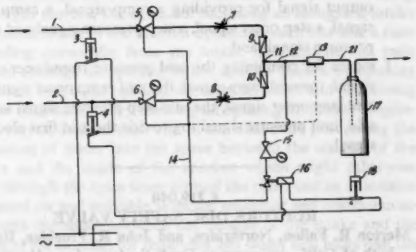
whereby positive interlocking is afforded without signigicant overlapping of said rounded nut head with said crutch frame leg.

4,219,038

GAS MIXING DEVICE FOR BREATH-PROTECTING, DIVING, MEDICAL AND LABORATORY TECHNIQUES

Wolfgang Lubitzsch, Lübeck-Gross Steinrade; Manfred Schinkmann, Lübeck, and Holmer Röhling, Reinfeld, all of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 741,932, Nov. 15, 1976, abandoned.
This application Jun. 9, 1978, Ser. No. 914,221
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1975, 2543165
Int. Cl.[2] G05D *11/03*
U.S. Cl. 137—7 **8 Claims**



8. A method of supplying a mixture of gases to breath-protecting, diving, medical and laboratory devices, using pressure regulators in the supply lines of each of the gases and a pressure regulator in a gas mixture line which pressure regulator is connected to each of the supply lines, comprising, regulating the admission-pressure in the mixing line while regulating the pressure in each of the supply line connections to the mixing line, and controlling the regulation of the pressures of the gases in the supply lines by regulating them in accordance with the pressures of the gases in the respective supply lines and the pressure of the mixed gases in the gas mixture line upstream of the admission-pressure regulator, the gas pressure for controlling the pressure in the supply lines being tapped from the gas mixture line and regulated by an on-off valve in accordance with the pressure conditions in the supply lines and the gas mixture line.

4,219,039

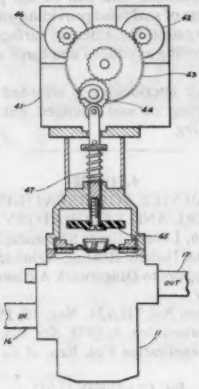
MULTIVARIABLE ANTI-G VALVE

Jamy L. Jaggars, San Antonio, Tex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 6, 1978, Ser. No. 949,188
Int. Cl.[3] F16K *17/36*
U.S. Cl. 137—38 **2 Claims**

1. In a pressure control system having a control valve with an air inlet, an air outlet, and a movable pilot port for controlling an air flow, the improvement comprising:

a. a cover element having an attached control rod, cooperating in movable relationship with the said pilot port;
b. means including a motor and tachometer servo system for actuating the said control rod in response to a first electrical signal;
c. an accelerometer having an electrical output signal;
d. a pressure transducer having an electrical output signal;



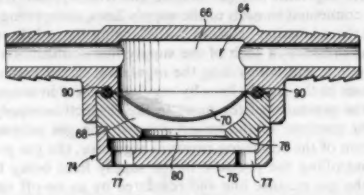
e. means cooperating with the said accelerometer electrical output signal for providing a ramp signal, a ramp onset signal, a step onset signal, a step pressure signal and a limit pressure signal; and
f. means for combining the said pressure transducer output signal, the said ramp signal, the said ramp onset signal, the said step onset signal, the said step pressure signal and the said limit pressure signal to provide the said first electrical signal.

4,219,040

RUPTURE DISC SAFETY VALVE

Merton R. Fallon, Northridge, and John R. Froehler, Reseda, both of Calif., assignors to Draft Systems, Inc., Northridge, Calif.

Filed Feb. 15, 1978, Ser. No. 878,070
Int. Cl.³ F16K *17/40, 35/00*
U.S. Cl. 137—68 R **9 Claims**



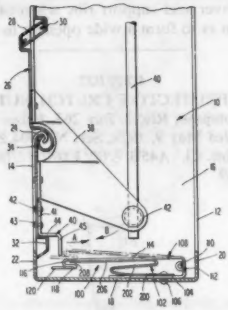
1. A safety valve for use with a beverage dispensing system having a pressurized source connected through a conduit to a container of beverage comprising:
(a) a housing with an inlet for connecting said valve to the pressure source and an outlet for connecting the valve to the beverage container;
(b) said housing having a chamber divided into at least two subchambers including a pressure chamber and a vented chamber;
(c) a rupture disc separating said pressure chamber from said vented chamber, said rupture disc having one side exposed to said pressure chamber and the other side exposed to said vented chamber, said rupture disc being in sealing relationship with said housing to separate said chambers;
(d) said housing further defining vent ports separate from said inlet and outlet to vent said vented chamber to surrounding atmosphere, said vent ports including a plurality of vent apertures located about the perimeter of said housing;
(e) said housing further including a second plate intermediate said rupture disc and said vent aperture, said second plate having an opening therethrough with the periphery of said second plate defining said opening being located in the path of said vent ports so that a tortuous path is formed between said rupture disc and said vent ports, and each of said vent ports defining an axial path parallel to the axis of said valve and concentric with the axis of said opening; and;
(f) said rupture disc being rupturable under a predetermined pressure level in said pressure chamber to prevent said beverage container from being overpressurized and said inlet and outlet communicating with said pressure chamber in a manner which allows said valve to be connected to the conduit connecting the pressure source and the container of beverage regardless of orientation of said valve whereby the operator can reverse inlets and outlets without affecting the operability of said valve.

4,219,041

ELECTRO-THERMAL FIRE PROTECTION LOCKING CLIP

Francis J. McCabe, 239 Hastings Ct., Doylestown, Pa. 18901, and John McCabe, 400 Grandview Ave., Feasterville, Pa. 19047

Filed Apr. 14, 1978, Ser. No. 896,237
Int. Cl.³ F16K *17/38*
U.S. Cl. 137—79 **14 Claims**

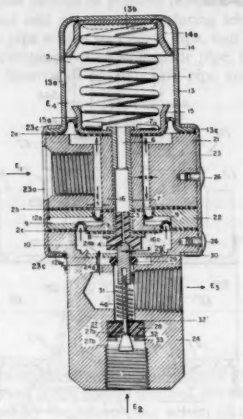


1. An improved heat responsive locking device for use with fire, smoke, or air control dampers having a frame and at least one blade pivotally mounted with respect to said frame, comprising:
locking clip means mounted on said frame for movement at least in response to a preselected increase in ambient temperature between normal and activated positions, said locking clip means allowing said blade to freely pivot with respect to said frame when said means is in its normal position, and preventing said blade from moving out of a preselected locked position with respect to said frame when said means is in its activated position, and further where, in response to said preselected increase in ambient temperature, said locking clip means being biased into said activated position.

4,219,042
PNEUMATIC RELAY

Wilfred H. St. Laurent, Jr., Marblehead, Mass., assignor to Bellofram Corporation, Burlington, Mass.

Filed Sep. 22, 1978, Ser. No. 945,147
Int. Cl.³ F15B 5/00
U.S. Cl. 137—85 11 Claims

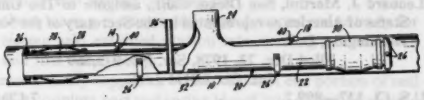


1. A pneumatic relay comprising
(a) a first helical compression spring;
(b) a movable exhaust-passageway-defining duct acted upon by said first compression spring, said duct having a permanently open venting end and an end opposite said venting end supporting a first movable valve seat;
(c) a valve stem and first valve element both jointly movable relative to said first valve seat to change the cross-sectional area between said valve seat and said first valve element;
(d) a second helical compression spring of which one end is fixedly supported and the other end acts upon said valve stem in a direction opposite to said first compression spring;
(e) a first rolling diaphragm having a predetermined effective area and having a fixed clamping flange and a movable clamping flange affixed to said duct, said first rolling diaphragm being under the action of a pneumatic pressure signal opposite in direction to the force exerted by said first spring upon said duct;
(f) a second rolling diaphragm having an effective area different from said predetermined effective area of said first rolling diaphragm, and said second rolling diaphgragm having a fixed clamping flange and a movable clamping flange affixed to said duct, and said second rolling diaphragm being under the action of said pneumatic pressure signal in the same direction as the force exerted by said first compression spring upon said duct;
(g) a pressure control chamber housing said first valve seat and said first valve element;
(h) a third rolling diaphragm closing one side of said pressure control chamber, said third rolling diaphragm having one fixed clamping flange and one movable flange affixed to said duct and jointly movable with said valve seat;
(i) means for admitting supply fluid under pressure from a supply of fluid under pressure to said pressure control chamber, said means including a second fixed valve seat, an extension of said valve stem supporting a second valve element cooperating with said second fixed valve seat and a supply passageway extending substantially parallel to said extension of said valve stem; and
(j) an output passageway having one end communicating with said control chamber, said stem projecting transversely through said output passageway, and flexible sealing means interposed between said pressure control chamber and said output passageway adapted to allow movement of said stem in a direction longitudinally thereof.

4,219,043
CONTINUOUS-FEED FLUID SUPPLY APPARATUS

Arthur L. Zimmerer, deceased, late of Lindsay, Nebr. (by Bernadette Zimmerer, joint executor); by First National Bank and Trust Co., joint executor, Columbus, Nebr.; David A. Siekmeier; Glen L. Andersen, both of Columbus, Nebr., and Charles H. Meis, Albion, Nebr., assignors to Lindsay Manufacturing Company, Lindsay, Nebr.

Filed Sep. 29, 1978, Ser. No. 947,038
Int. Cl.² F16L 27/00
U.S. Cl. 137—312 5 Claims

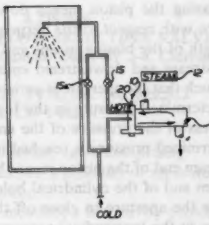


1. In a continuous-feed fluid supply apparatus usable with a linear moving irrigation system for supplying water thereto, a main supply conduit having a generally continuous longitudinal seam therein which can be opened and closed on a control basis, an extractor located in the conduit and movable along the length thereof, the extractor including an elongated intake positioned inside of the conduit opened at each end and a riser extending outwardly from the intake intermediate the ends thereof through an opening in the conduit caused by opening the seam, means for opening the seam ahead of and for closing it after the riser thereby creating an opening of limited longitudinal extent, seals at each end of the intake for preventing the admission of water into the space between the outside of the intake and the inside of the conduit which might otherwise leak through the open seam around the riser, and an evacuator mounted on and movable with the extractor and communicating with the space between the outside of the intake and the inside of the conduit for removing any water that leaks past the seal so as to prevent water from being spilled on the ground alongside the main supply conduit through the opening created in the conduit seam for the riser.

4,219,044
CONTROL VALVE ASSEMBLY

Warren M. Wilson, 809 Superior Dr., Huron, Ohio 44839

Filed Oct. 13, 1978, Ser. No. 951,073
Int. Cl.³ F16K 49/00
U.S. Cl. 137—340 26 Claims



1. A control valve assembly comprising housing means for receiving an incoming flow of cold water from a cold water source and defining first and second cold water flow paths, first valve means for regulating a flow of cold water in said first flow path to a heat exchanger, mixing chamber means for

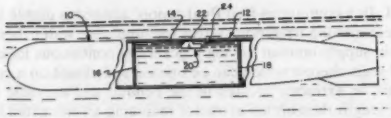
receiving the flow of hot water from the heat exchanger and a flow of cold water from said second flow path, second valve means for regulating the flow of cold water in said second flow path, said mixing chamber means having an outlet for mixed hot and cold water, and controller means responsive to changes in the demand for mixed water for varying the rate at which cold water flows in said first and second flow paths as a predetermined function of the flow rate of mixed water through said outlet from said mixing chamber means.

4,219,045

SEA WATER PRESSURE REGULATOR VALVE

Leonard J. Martini, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 22, 1978, Ser. No. 972,560
Int. Cl.³ E01H *1/10*
U.S. Cl. 137—899.2 **7 Claims**



1. An ambient fluid pressure regulator valve for a fuel tank comprising:

an elongated body having a longitudinal cylindrical hole which opens into said fuel tank and a perpendicular passageway which is adapted to open the cylindrical hole to the ambient fluid;

piston means slidably mounted in the cylindrical hole with an O-ring on each side of the perpendicular passageway so as to render the movement of the piston independent of ambient fluid pressure;

said piston means having a longitudinal passageway throughout its entire length so as to open into the fuel tank at a downstream end and open into the bottom of the cylindrical hole at an upstream end;

said piston means having at least one aperture adjacent the perpendicular passageway for variably opening the piston means longitudinal passageway to the ambient fluid as the piston means slides in the cylindrical hole so that ambient fluid will flow from the perpendicular passageway into the piston means longitudinal passageway and out the downstream end of the piston means into the fuel tank;

means biasing the piston means downstream to open the aperture with respect to the perpendicular passageway;

the strength of the biasing means and the effective areas of the upstream and downstream ends of the piston means being such that the aperture is variably opened to maintain a predetermined pressure in the fuel tank as fuel is used regardless of the pressure of the ambient fluid after said predetermined pressure is reached in the fuel tank;

the upstream end of the piston means being spaced from the upstream end of the cylindrical hole a distance sufficient to cause the aperture to close off the perpendicular passageway to the longitudinal passageway when the piston means is slid into said space; and

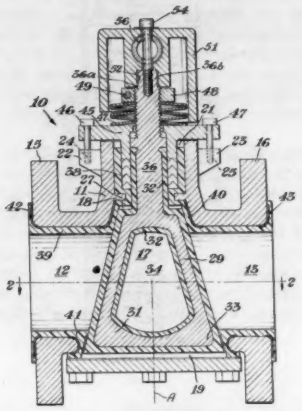
an O-ring which is mounted in the piston means substantially coextensive with the downstream end of the aperture for sealing the aperture from the perpendicular passageway when the aperture is closed off from said perpendicular passageway.

4,219,046

PLUG VALVE AND METHOD

Walter H. West, Bay City, and E. D. Prueter, Saginaw, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 17, 1978, Ser. No. 925,082
Int. Cl.² F16K *5/02, 25/00*
U.S. Cl. 137—375 **3 Claims**



1. In a plastic-lined plug valve, the plastic-lined plug valve comprising in cooperative combination a valve body having a first or entrance port and a second or exit port, the entrance and exit ports being in full communication with a generally frustoconical plug-receiving cavity, the plug-receiving cavity having a first end of lesser diameter and a second end of major diameter, the plug-receiving cavity being in communication with a plug stem receiving passage at its first end, the plug-stem receiving passage being in communication with space external to the valve body, a synthetic resinous thermoplastic lining disposed within the valve body parts and plug receiving cavity, a valve plug disposed within the plug-receiving cavity, the valve plug generally conforming to the plug-receiving cavity, the plug defining an aperture therethrough and on rotation of the plug within the plug-receiving cavity providing selective communication between the first and second ports, the improvement which comprises first and second rigid foraminous generally annular members within at least a portion of the lining within the plug-receiving cavity, the first rigid foraminous annular member in the region of lesser diameter and the second rigid foraminous annular member in the region of maximum diameter, the rigid foraminous members being generally embedded within the plastic lining at a location adjacent the plug and the plug and plug-receiving cavity of the valve tapering sufficiently that the taper of the plug and cavity is self-releasing.

4,219,047

TELESCOPING EDUCTION PIPE ASSEMBLY WITH ELASTOMERIC BOOT

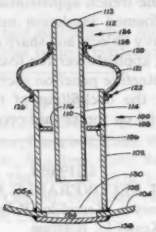
Richard B. Polley, St. Charles, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed May 12, 1978, Ser. No. 905,242
Int. Cl.³ B61D *5/00*
U.S. Cl. 137—590 **6 Claims**

1. An eduction pipe and sump arrangement in a railway tank car comprising:

an eduction pipe extending down from the top of the tank and terminating a sufficient distance above the tank bottom to accommodate relative movement between the tank top and the tank bottom; a sump in the tank bottom below said eduction pipe; a guide pipe attached to the interior of

the tank bottom and extending over at least a portion of said sump; said eduction pipe extending within said guide pipe; an elastomeric boot seal assembly embodying a boot made of elastomeric material having one end portion attached to said eduction pipe and the other end attached to said guide pipe; whereby to seal said eduction pipe with respect to said tank, and allow removal of lading from said tank by vacuum suction or positive pressure through said guide pipe and said eduction pipe; during telescoping of said eduction pipe within said guide pipe, said elastomeric boot also telescoping within said guide pipe; the distance between the inner wall of the guide pipe and the outer



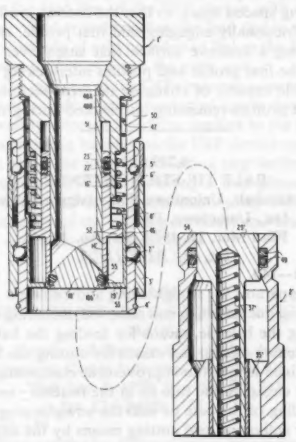
wall of the eduction pipe being sufficiently great that the elastomeric boot is not readily pinched, abraded or otherwise damaged by the telescoping action of the eduction pipe and boot within the guide pipe; eduction pipe centering means inside said guide pipe comprising a ring integral with the integral surface of said guide pipe to provide centering for the eduction pipe and a load path for lateral and longitudinal forces applied to said eduction pipe; said ring being located sufficiently far below said elastomeric boot whereby said elastomeric boot does not contact said ring during relative movement between said eduction pipe, boot and said guide pipe.

4,219,048

COUPLING DEVICE

Kjell R. Ekman, Zug, Switzerland, assignor to Ekman Engineering AG, Zug, Switzerland

Continuation-in-part of Ser. No. 691,105, May 28, 1976, abandoned. This application Mar. 8, 1978, Ser. No. 884,668
Int. Cl.[2] F16L *37/28*
U.S. Cl. 137—614.03 **8 Claims**



1. A coupling device for supplying fluid from a pressurized source to an output conduit without fluid leakage, said coupling device comprising:

a first coupling part having an axial flow passageway extending therethrough,

a second coupling part having an axial flow passageway extending therethrough,

said first and second coupling parts each having on a respective first end thereof means to permit the detachable coupling of said parts with their respective axial flow passages aligned to permit fluid flow therethrough,

a first, hollow valve body fixedly supported within said first coupling part and including a plurality of holes extending completely therethrough,

a second valve body positioned within said second coupling part and having an enlarged portion confronting said first hollow valve body, said second valve body also having an elongated portion extending through a hollow hub portion of said second coupling part,

resilient biasing means engaging said second valve body for biasing said enlarged portion into abutting contact with said first valve body,

means slidably supported within said first end portion of said first coupling part and spring biased into a position closing said fluid passageway through said first coupling part,

said second coupling part including sealing means providing a fluid-tight connection with said slidable means prior to sliding movement of said slidable means to open said fluid passage through said device as said coupling parts are brought into said coupling relationship;

said slidable means comprising a first hollow casing slidably engaging said first valve body and including a hub portion extending radially outwardly from said first valve body, which hub portion is spaced intermediate the end portions of said first hollow casing,

said slidable means further comprising a second hollow casing slidably engaging a radially inner wall of said first coupling part and including an elongated end portion extending radially inwardly toward said first hollow casing, with resilient biasing means extending between said first coupling part and said second hollow casing for biasing said elongated end portion into a position substantially surrounding an end portion of said first valve body,

whereby movement of said first and second coupling parts toward said coupling relationship causes said second coupling part to engage and press said elongated end portion into abutment with said radially extending hub portion, following which, said hub portion is pressed into abutment with said first coupling part, thereby opening said fluid passageway through said first coupling part.

4,219,049

MULTIPLE FLOW SELECTION VALVE

Michael Skelly, Rte. 5-Canyon Oaks-Bx 2-4, Claremore, Okla. 74017

Filed Jul. 31, 1978, Ser. No. 929,312
Int. Cl.[2] F16K *11/06*
U.S. Cl. 137—625.3 **6 Claims**

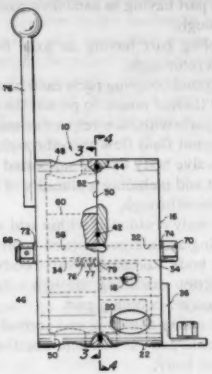
1. A multiple flow selection valve comprising:

a first valve body member, a plurality of separate fluid inlet ports provided therein;

a second valve body member, a first cavity provided in said second member, a fluid return port carried by said second member and in communication with the first cavity, a second cavity provided in said second member, a fluid working port carried by said second member and in communication with the second cavity;

means for connecting said first and second valve body members together such that one said member is moveable with

respect to the other, the said inlet ports of the first member being selectively positionable in communication with one



or both of said first and second cavities of the second member.

4,219,050

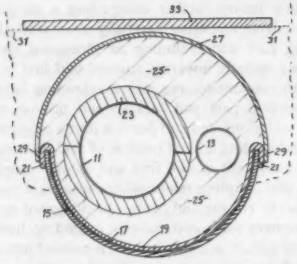
THERMAL INSULATION METHOD AND MEANS

Harold M. Hargrave, 310 Granger Rd., Wayland, N.Y. 14572, and Robn J. Anderson, 15 Foxhill La., Camillus, N.Y. 13031

Filed Feb. 15, 1979, Ser. No. 12,388

Int. Cl.[2] F16L *59/10*

U.S. Cl. 138—97 **12 Claims**



1. The method of replacing deteriorated thermal insulation of a steam conduit running along and within a metal casing of approximately circular cross section extending approximately horizontally and buried beneath the surface of the ground, which comprises the steps of

(a) excavating a trench sufficiently to expose at least the upper half of said casing

(b) cutting said casing longitudinally along opposite sides approximately at the mid height thereof, to sever the upper half of the casing from the lower half thereof,

(c) removing the upper half of the casing

(d) removing deteriorated insulation from the vicinity of said conduit, including removing all deteriorated insulation from the lower half of said casing,

(e) thoroughly cleaning the inner face of said lower half of said casing,

(f) applying a primer coating to the cleaned inner face,

(g) applying a permanently flexible elastomeric waterproof coating to said inner face of the lower half of said casing over said primer coating,

(h) applying a layer of preformed thermal insulation material around said conduit,

(i) applying a filling of foamed insulation material in position to rest on and be supported by said elastomeric waterproof coating and to fill substantially the space between the bottom half of said casing and said conduit and also to form a body extending over and around said conduit and extending up to approximately the original outline of the upper half of the casing,

(j) applying a permanently flexible elastomeric waterproof coating over the exposed surface of said foamed insulation material and extending such coating to make a sealing connection with the waterproof coating previously applied to the lower half of the casing before the foamed insulation material was applied,

(k) backfilling the trench approximately to the level of the top of said foamed insulation material while avoiding contact of heavy objects and sharp objects with the waterproof coating applied over the foamed insulation,

(l) placing a protective panel on such backfill, and

(m) completing the backfilling of the trench by placing backfill material on top of said protective panel.

4,219,051

HEAT RECOVERABLE ARTICLE

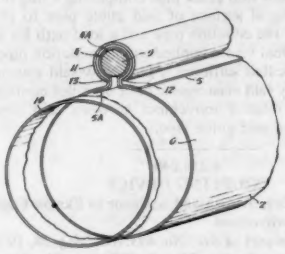
André H. L. D'Haeyer, Kessel-lo, Belgium, assignor to N.V. Raychem S.A., Kessel-lo, Belgium

Filed Aug. 2, 1976, Ser. No. 711,075

Claims priority, application United Kingdom, Aug. 4, 1975, 32448/75

Int. Cl.[2] F16L *9/12, 57/00*

U.S. Cl. 138—178 **25 Claims**



1. A heat recoverable sheet having first and second profiles projecting from the same plane of the sheet, said profiles projecting substantially from only one surface of the sheet, said profiles being spaced apart, so that the second profile may be capable of frictionally engaging said first profile, said second profile having a concave surface that snaps over a convex surface of the first profile said profiles interlocking to form a hollow article capable of changing its cross-section upon recovery, said profiles remaining interlocked during recovery.

4,219,052

BALE TIE STRAIGHTENER

Herman L. Aronhalt, Uniontown, Pa., assignor to Cavert Wire Company, Inc., Uniontown, Pa.

Filed Mar. 12, 1979, Ser. No. 20,345

Int. Cl.[3] B21F *11/00*

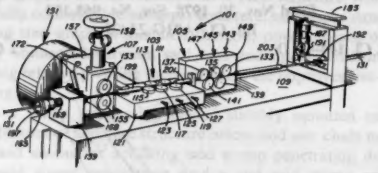
U.S. Cl. 140—140 **10 Claims**

1. In an apparatus for straightening and cutting a used wire bale tie having one fastening end removed, including means for straightening the bale tie, means for feeding the bale tie into said straightening means, and means for cutting the bale tie to a predetermined length the improvement comprising:

means for engaging the bale tie at the fastening end to limit the feeding of the bale tie into the straightening means;

means for activating said cutting means by the engagement of the bale tie at the fastening end with said engaging means;

means for withdrawing said bale tie from said straightening means; and



means for activating said withdrawing means activated by the cutting of said bale tie to a predetermined length.

4,219,053

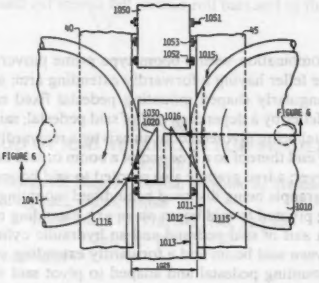
METHOD FOR HANDLING DUAL IN-LINE PACKAGES

Clifford A. Tyner, 73 Peter, Campbell, Calif. 95008, and Dean L. Westbrook, 377 Jai Dr., San Jose, Calif. 94086

Division of Ser. No. 695,750, Jun. 14, 1976, Pat. No. 4,122,874. This application Oct. 30, 1978, Ser. No. 955,777

Int. Cl.³ B21F *1/02*

U.S. Cl. 140—147 **2 Claims**



1. A method for straightening along a first preselected line the lead tips of a moving Dual In-Line Package (DIP) as it continuously moves along a path, said DIP having a body and leads with shoulder and tip portions, said method comprising the steps of:

engaging the lead tips of the DIP device with an annular rotating member and bending the lead tips to a first position to one side of said preselected line as the DIP device continuously moves along the path; and

bending the lead tips of the DIP device to a second position on the other side of said preselected line as determined by an inwardly directed bias force applied to the tips of said annular rotating member as the DIP device continuously moves along the path, said bending step further comprising guiding said lead tips along a first platen having a surface disposed in tangential relationship with the annular periphery of the rotating member, and oriented at an angle with reference to said path.

4,219,054

METHOD AND APPARATUS FOR FILLING VALVE BAGS

Clarence F. Carter, and Emmanuel Mechalas, both of Danville, Ill., assignors to Carter Industries, Danville, Ill.

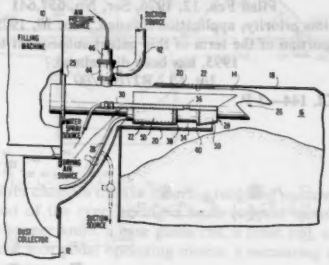
Filed Jun. 7, 1978, Ser. No. 913,541

Int. Cl.² B65B *1/18, 1/28*

U.S. Cl. 141—10 **18 Claims**

1. A filling nozzle for filling a valve bag with particulate material, the valve bag having a filling valve with a water activated sealing means on an interior surface of the valve, the filling nozzle comprising:

an elongated member for insertion through the filling valve and into the interior of the bag, the elongated member having a material passage therethrough for the introduction of particulate material into the interior of the bag from a location outside the bag and having means forming a cavity in a peripheral surface thereof at a position that is adjacent the interior surface of the filling valve with the elongated member inserted into the filling valve during a filling operation; and



first and second conduit means along the member for providing communication from outside the valve bag to the cavity, the first conduit means comprising an air supply passage for supplying air under pressure to the cavity to free the interior surface of the filling valve adjacent the cavity from contamination by particulate material and the second conduit means comprising a water spray passage for supplying and directing a water spray against the interior surface of the filling valve adjacent the cavity.

4,219,055

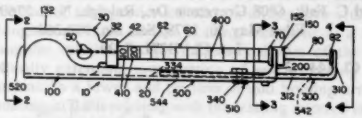
SYRINGE FILLING AID

George R. Wright, 202 S. 11th St., Lincoln, Nebr. 68508

Continuation of Ser. No. 589,612, Jun. 23, 1975, abandoned. This application Jan. 21, 1977, Ser. No. 761,490

Int. Cl.² B65B *3/32;* B67C *3/16*

U.S. Cl. 141—27 **9 Claims**



1. A syringe filling aid for filling a syringe of the type having an elongated tube having a needle at one end and a hilt at its other end, said hilt extending transversely of said tube, said tube having a plunger telescopically projecting through the hilt end of said tube, said aid comprising: an elongated body, a bottle-holding means attached to said body for securing a bottle of medicine to said body, a hilt-engaging portion attached to said body and spaced in one direction from said bottle-holding means and adapted to engage that side of said hilt which is opposite the needle end of said syringe tube to limit movement of said syringe tube away from said bottle-holding means when said needle is in said bottle, a plunger stop assembly comprising a stop disposed on the other side of said hilt-engaging means from said bottle-holding means and a stop extension, said body and said stop extension defining two parts of a length adjustment assembly, said two parts lapping each other and telescoping with respect to each other in directions generally toward and away from said bottle-holding means, the majority of said lapping of said two parts being in the area between said hilt-engaging means and said bottle-holding

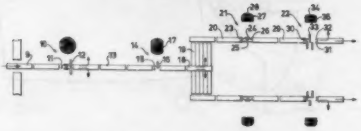
means, means telescopically attaching said two parts of said attachment assembly together, and means for attaching said stop extension adjustably to said body in a manner so that said stop can be fixed in any one of many positions of distance from said hilt-engaging means.

4,219,056

METHOD AND APPARATUS FOR SAWING TIMBER

Nils E. Lindström, Karlstad, Sweden, assignor to Vänerskog AB, Karlstad, Sweden

Filed Feb. 12, 1976, Ser. No. 657,641
Claims priority, application Sweden, Feb. 19, 1975, 7501857
The portion of the term of this patent subsequent to May 26, 1995, has been disclaimed.
Int. Cl.[2] B27B *1/00*
U.S. Cl. 144—3 P **15 Claims**



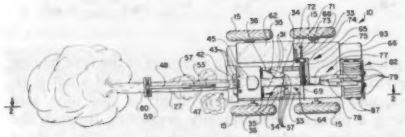
1. A method for sawing timber which has an overall curved and non-curved longitudinal length comprising edge sawing said timber along opposite sides of said non-curved longitudinal length to produce parallel diametrically opposed edge cut surfaces having said curved longitudinal length therebetween, heart split sawing said edge sawed timber perpendicular to said parallel edge cut surfaces and along the curved center line of said curved longitudinal length to produce two curved edge sawed sections of said timber each having a curved center cut surface, dividing sawing each of said heart split cut sections by at least one saw cut along the longitudinal length of said section parallel to said center cut surface.

4,219,057

TIMBER TO FIREWOOD PROCESSING MACHINE

David C. Falk, 6808 Greystone Dr., Raleigh, N.C. 27609

Filed May 30, 1978, Ser. No. 910,364
Int. Cl.[2] B27L *7/00*
U.S. Cl. 144—3 K **2 Claims**



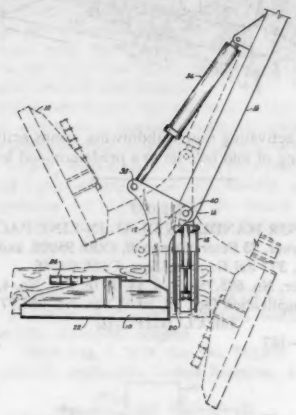
1. A wood processing machine comprising: a self-propelled land type vehicle having an operative power source; a hydraulic type lift boom means with a pick-up claw on one end thereof operatively mounted on said vehicle for picking up timber and feeding it into said machine; a timber feed mechanism in the form of horizontally disposed feed claws pivotably disposed on opposite sides of said timber, said mechanism operatively mounted on said vehicle to feed said timber through said wood processing machine; cutting means mounted on said vehicle for cutting said timber into firewood length logs; splitting means operatively mounted on said vehicle for splitting said logs into burnable size firewood; means for stackingly receiving said firewood after it has been split.

4,219,058

APPARATUS FOR CONVERTING A TREE FELLER INTO A FELLER BUNCHER

Alva Z. Albright, 6407 Masonic Dr., Alexandria, La. 71301

Filed Nov. 30, 1978, Ser. No. 965,352
Int. Cl.[3] A01G *23/08*
U.S. Cl. 144—3 D **2 Claims**



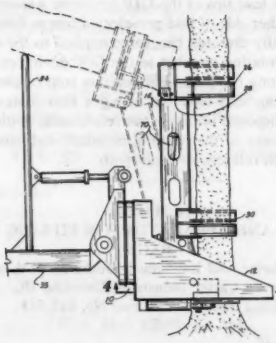
1. In combination with a boom type prime mover, a directional tree feller having a forwardly extending arm; a substantially triangularly shaped mounting pedestal fixed normal to said tree feller by a depending end of said pedestal; said mounting pedestal being pivoted about an axis by a reawardly extending upper end thereof to a free end of a boom of said boom type prime mover; a tree grapple also pivoted to said boom free end said tree grapple being disposed behind said mounting pedestal and being pivoted to said boom on an axis extending normal to said pivot axis of said pedestal and an hydraulic cylinder pivoted between said boom and a forwardly extending upper end of said mounting pedestal and adaped to pivot said mounting pedestal and tree feller fixed thereto forwardly clear of said grapple, and rearwardly for engaging and lifting said grapple.

4,219,059

APPARATUS FOR HARVESTING AND BUNCHING TREES

Alva Z. Albright, 6407 Masonic Dr., Alexandria, La. 71301

Filed May 31, 1978, Ser. No. 911,587
Int. Cl.[3] A01G *23/08*
U.S. Cl. 144—34 R **1 Claim**



1. In an apparatus for harvesting and bunching trees for use

with a power train protected by roll bars mounted thereon and extending thereabove, said apparatus being of the vertically oriented horizontally articulated type, with chain saw and stump gripper means mounted in a base structure which is pivotally connected to an upper structure, said upper structure having tree grapples mounted thereon, power means operatively connected between said base and upper structure for causing relative pivoting therebetween, the improvement comprising:

(a) a stump penetrating device slidably mounted on the bottom of said base structure below said saw chain means, and means for actuating said stump penetrating device, said stump penetrating device and said stump gripper means defining means triangularly engaging a stump portion of a tree to rigidly anchor said apparatus during harvesting of a tree;

(b) chocking means pivotally mounted concentric with the chain saw in said base structure for independently following said chain saw into a cut as said cut is opened by relative pivoting of said base and said upper structure, said chocking means defining means for supporting an engaged tree from slipping in said grappels during cutting of the tree by said chain saw means;

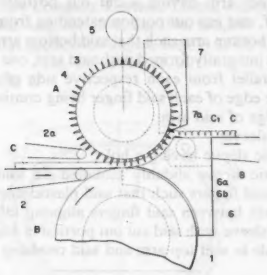
(c) said tree grapples defining upper grapple means hinged to the top of said upper structure for swinging a cut tree from vertical to horizontal over the power train, and for releasing said cut tree to fall on said roll bars and to the ground.

4,219,060

METHOD OF AND APPARATUS FOR TENDERIZING VENEER

Katsuji Hasegawa, Nagoya, Japan, assignor to Meinan Machinery Works, Inc., Ohbu, Japan

Filed Jul. 17, 1978, Ser. No. 925,638
Int. Cl.[2] B27L *5/02*
U.S. Cl. 144—213 **18 Claims**



1. A method of tenderizing veneer comprising the steps of:

feeding along a plane a veneer sheet cut off from a log in a direction substantially perpendicular to the fiber direction of said veneer sheet;

forming a plurality of cuts on one side of said veneer sheet, each cut having a straight bottom line substantially parallel to the fiber direction of the veneer sheet;

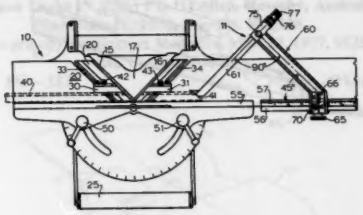
bending the fed veneer sheet by means of a fixed abutment member in a direction opposite the cut side to bend the veneer sheet about a guide member such that a ridge formed by the bent veneer sheet runs parallel to said straight bottom line, so as to form therein in a controlled manner the formation of a plurality of cracks from the number of cuts formed, thereby tenderizing said veneer and precluding the curling thereof.

4,219,061

MITER CHOPPER ATTACHMENT FOR MEASURING PICTURE FRAME MOLDING

Richard W. Duggins, Cedar Grove, N.C., assignor to S. & W. Framing Supplies, Inc., New Hyde Park, N.Y.

Filed Nov. 2, 1978, Ser. No. 957,214
Int. Cl.[2] B27G *5/04*
U.S. Cl. 144—217 **7 Claims**



1. In a miter chopper used in mitering rabbeted picture frame molding and of the type having a knife support member, at least one chopper knife, a base guide rail, a front rail, a chopping bed and foot pedal operating means, a measuring attachment comprising:

(a) a scale fixed on the top surface of said front rail and providing measuring indicia capable of determining the length of the rabbeted molding strip to be mitered;

(b) a pair of interconnecting arm members, said arm members comprising:

(i) an elongated mounting arm having a base portion slidably mounted on said front rail, and having means for locking said arm base portion on said front rail at selected positions thereon corresponding to selected lengths of rabbeted molding to be mitered, said mounting arm further having a lens member on said base portion providing means for viewing said measuring indicia on said scale therethrough, an arm portion extending outwardly from said base portion, the longitudinal axis of said arm portion residing at a fixed selected angle with respect to the longitudinal axis of said front rail corresponding to the angle of miter being cut; and

(ii) an elongated holding arm adjustably and slidably mounted in a slotted outer end portion of the outwardly extending arm portion of said mounting arm with the longitudinal axis of said holding arm held at a fixed angular relation to the longitudinal axis of the outwardly extending arm portion of said mounting arm, means on a lower end portion of said holding arm for mating in flush relation with the leading mitered end of a rabbeted molding strip to be cut to a desired length and for restricting the forward movement of said rabbeted molding strip as it rests against said base guide rail, additional means on said lower end portion of said holding arm for mating with the leading inside edge of the rabbet of said molding strip and means for retaining said holding arm fixed in position on said mounting arm portion in a respective holding position corresponding to the length of rabbeted molding being cut.

4,219,062

MAGNETIC FASTENER-HOLDING TOOL ATTACHMENT

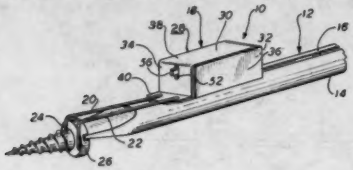
Samuel Berkman, Florham Park, N.J., assignor to BST & Associates, Inc., Florham Park, N.J.

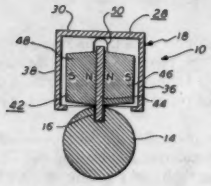
Filed Jun. 21, 1979, Ser. No. 50,774
Int. Cl.[3] B25B *15/00*
U.S. Cl. 145—52 **8 Claims**

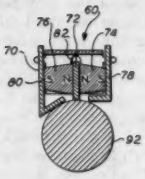
1. A magnetic fastener-holding tool attachment adapted to hold a rotatable fastener in engaged relation with a driver therefor comprising

a magnetic holding assembly including at least two magnets, means for holding said two magnets in like-pole to like-pole relation,

at least one elongated pole piece positioned between said two magnets and having an elongated surface for engaging the surface of a driver tool along a direction generally parallel to the axis of rotation of the driver tool, and







a pair of resilient rods extending from said magnetic holding assembly, said rods each having a first portion adapted to extend in a direction generally parallel to said axis of rotation and a second portion adapted to extend in a direction generally transverse to said axis of rotation.

4,219,063

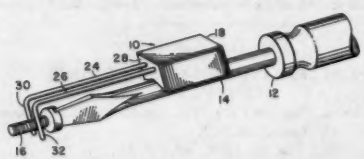
TOOL FOR HOLDING A FASTENER TO A DRIVER THEREFOR

Samuel Berkman, Florham Park, N.J., assignor to BST & Associates, Inc., Florham Park, N.J.

Continuation-in-part of Ser. No. 809,163, Jun. 23, 1977, abandoned. This application Jul. 19, 1979, Ser. No. 58,765

Int. Cl.³ B25B *15/00*

U.S. Cl. 145—52 **8 Claims**



1. A tool adapted to hold a rotatable fastener in engaged relation with a driver for said fastener comprising

a single magnetic block adapted to be attached via magnetic force to a ferrous portion of said driver, and adapted to be removed laterally from said driver without disengaging the driver from the fastener, and

a pair of resilient rods extending from said magnetic block, said rods each having a first portion adapted to extend in a direction generally parallel to the axis of rotation of said fastener and a second portion adapted to extend in a direction generally transverse to said axis of rotation.

4,219,064

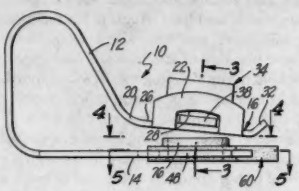
NON-MARRING CLIP NUT

Anthony H. Lozano, Westminster, Calif., assignor to Shur-Lok Corporation, Irvine, Calif.

Filed Jun. 23, 1978, Ser. No. 918,386

Int. Cl.² F16B *39/00*

U.S. Cl. 151—41.75 **7 Claims**



1. A clip nut of the type having a long, flat continuous body, said body bending back upon itself such that the two portions near the ends thereof lie essentially parallel to each other, one of said two portions forming the top arm of said clip nut the other of said two portions forming the bottom arm of said clip nut each of said arms having an inside surface and an outside surface, said inside surfaces directed toward each other, each of said arms having two side edges and an end edge, the improvement which comprises:

said top arm having a hole near the end thereof,

said top arm having a retaining means mounted on said outside surface of said top arm and positioned over said hole in said top arm;

said bottom arm having a cut out portion near the end thereof, said cut out portion extending from the end edge of said bottom arm such that said bottom arm includes two fingers integrally formed with said arm, one finger extending parallel from each respective side of said arm, the outside edge of each said finger being continuous with the side edge of said arm;

a plastic sleeve;

said plastic sleeve having a hole;

said plastic sleeve slidably mounted on said bottom arm about said fingers such that said plastic sleeve slides back and forth between said fingers aligning said hole in said plastic sleeve with said cut out portion in said bottom arm, said hole in said top arm and said retaining means.

4,219,065

SKIDDING AND/OR TIRE PROTECTOR

Karl E. Gunnarsson, Västervik, Sweden, assignor to Gunnebo Bruks Aktiebolag, Gunnebobruk, Sweden

Continuation of Ser. No. 733,376, Oct. 18, 1976, abandoned. This application Aug. 14, 1978, Ser. No. 933,644

Int. Cl.² B60C *11/00, 27/00*

U.S. Cl. 152—243 **4 Claims**

1. An anti-skid and anti-wear protector chain for a truck tire, said protector chain comprising:

a string of spaced apart chain links in the form of a closed loop; and a plurality of anti-skid and anti-wear members coupling adjacent chain links, each of said coupling members consisting of an elongate bar bent out of plane to form a loop with overlapping side-by-side disposed ends thereby defining a space within each of the coupling

members, said overlapping ends having flat outer surfaces so as to form an outer crosswise surface larger and wider than the remaining portions of the loops and lengthwise fixedly secured in contact to each other so that said outer surfaces are disposed in a common outwardly facing plane extending substantially parallel to the surface of the tire, each of said coupling members encompassing two adjacent chain links thereby coupling the links to each other,

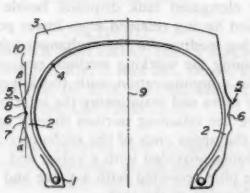
the space within the coupling members and the cross-sectional shape of the chain links being correlated so that the overlapping ends of each of the coupling members are locked in a fixed position relative to the links and the outwardly facing surfaces of the overlapping ends are disposed in substantially the same direction in said common plane relative to the associated chain link and at an angle with respect to said loop.

4,219,066

PNEUMATIC TIRE HAVING A SIDEWALL PROTECT RIB PROVIDED WITH AN ARTICULAR PART OR GROOVE

Akira Tamura, Higashimurayama; Yasuo Suzuki, Akigawa, and Akira Oikawa, Higashimurayama, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Aug. 30, 1978, Ser. No. 938,147
Claims priority, application Japan, Sep. 7, 1977, 52-106763
Int. Cl.[2] B60C *13/00*
U.S. Cl. 152—353 G **5 Claims**



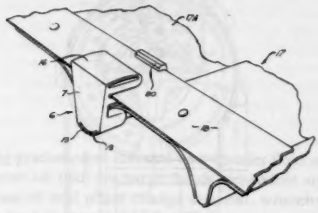
1. In a pneumatic tire comprising a pair of bead cores, a pair of sidewall portions, a tread portion extending between said sidewall portions, at least one carcass ply whose ends are wound around said bead cores, respectively, and a protect rib provided on the outer surface of at least one sidewall portion and at the maximum width region of said carcass ply so as to prevent side-cuts in off-road running, the improvement comprising an articular part for dividing said protect rib into radially inner and outer portions with respect to the rotational axis of tire, said articular part being disposed at a position corresponding to a range between 30% and 70% of the tire height perpendicular to the bead base portion of the tire, the perpendicular distance from the equatorial line to the outer surface of said protect rib being gradually increased from said articular part toward said radially inner and outer portions when said tire is united with a rim and not inflated, and said articular part not being projected out of the outer surface of said protect rib when said tire is deformed under loaded condition after being inflated to a normal pressure.

4,219,067

ANTI-RATTLE CURTAIN ASSEMBLY

Geoffrey J. Hurst, Lugarno, Australia, assignor to Byrne & Davidson Doors (N.S.W.) Pty. Limited, Revesby, Australia

Filed Mar. 21, 1978, Ser. No. 888,526
Claims priority, application Australia, Mar. 23, 1977, 9525/77
Int. Cl.[2] E05F *7/04*
U.S. Cl. 160—133 **9 Claims**



1. A curtain assembly comprising an anti-rattle element and a curtain of a movable closure, the curtain having generally parallel edges and a plurality of engageable portions positioned adjacent at least one of the parallel edges, the engageable portions being at least partially spaced from adjoining portions of the curtain, said anti-rattle element comprising:

a body having first and second abutment side faces and a rear face having a recess therein for embracing a part of the edge of the curtain in such manner that said abutment side faces are disposed on opposite sides of the curtain and face outwardly therefrom; and

a resilient latching tongue protruding from said rear face of said body and having a tip quick-releasably engageable with one of the engageable portions of the curtain to hold said anti-rattle element to the curtain.

4,219,068

DIE CASTING MACHINE

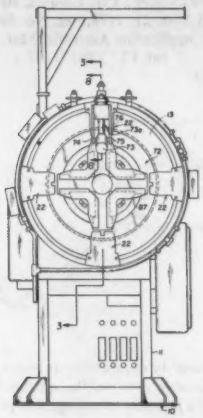
David Greenwood, Ilmington, near Shipston-on-Stour, England, assignor to Dynacast International Limited, Warwickshire, England

Filed May 30, 1979, Ser. No. 43,625
Int. Cl.[3] B22D *17/04*
U.S. Cl. 164—316 **57 Claims**

1. In a pressure die casting machine comprising a back plate, a reservoir for molten metal, at least one gooseneck, one end of which is adapted to be immersed in the molten metal and the other end of which terminates in a nozzle having an end surface adapted to be brought into engagement with a back surface of a die set from which a feed passage extends to a die cavity defined by the die set, said gooseneck further having a passage communicating said one end with said other end and pump means for drawing molten metal into said gooseneck through said one end and injecting same from said gooseneck through said other end, said die set being movably mounted on said back plate between a closed position in which the die cavity is defined and an open position in which an article cast within the cavity can be ejected, the improvement comprising adjustable closure means for said die, and a track on said back plate, said closure means being adjustable along said track.

24. In a pressure die casting machine comprising a back plate, a reservoir for molten metal, at least one gooseneck, one end of which is adapted to be immersed in the molten metal and the other end of which terminates in a nozzle having an end surface adapted to be brought into engagement with a back

surface of a die set from which a feed passage extends to a die cavity defined by the die set, said gooseneck further having a passage communicating said one end with said other end and pump means for drawing molten metal into said gooseneck through said one end and injecting same from said gooseneck through said other end, said die set being movably mounted on said back plate between a closed position in which the die cavity is defined and an open position in which an article cast



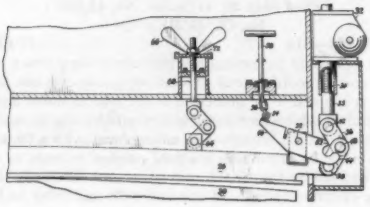
within the cavity can be ejected, the improvement comprising means for disposing the back plate in or near a vertical plane, the gooseneck nozzle having a passage therein, means for positioning said nozzle so that a part of said passage lies in or near a horizontal plane, when the nozzle end surface is engaged with the back surface of the die set, and an end portion of said passage is inclined upwardly from the major part to the end surface of the nozzle.

4,219,069

QUICK RELEASE FOR SECTOR PLATE

Richard F. Stockman, Friendship, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed May 31, 1979, Ser. No. 44,281
Int. Cl.[3] F28D *19/04*
U.S. Cl. 165—9 **5 Claims**



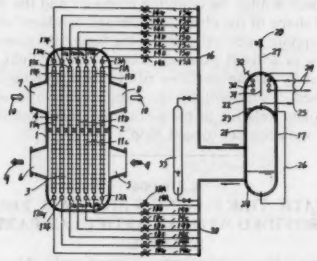
1. Rotary regenerative heat exchange apparatus having a rotor including a central rotor post and a concentric rotor shell spaced therefrom to provide an annular space therebetween, a mass of heat absorbent material carried in the annular space between the rotor post and the rotor shell, a housing surrounding the rotor in spaced relation having inlet and outlet ducts at opposite ends thereof for a heating fluid and for a fluid to be heated, support means adapted to support the rotor for rotation about its axis, a guide bearing at the opposite end of the rotor adapted to preclude radial movement of the rotor post, means for rotating the rotor about its axis, a sector plate intermediate the end of the rotor and the rotor housing adapted to maintain the heating fluid separate from the fluid to be heated, support means movable in accordance with axial expansion of the rotor post adapted to support the sector plate at a point adjacent the inboard end thereof, actuating means at the outboard end of the sector plate adapted to deform the sector plate into a curvilinear shape that corresponds to the profile of the rotor, linkage means connecting the actuating means to the sector plate, and a quick release mechanism interposed in said linkage means permitting the actuating means to be operatively detached from the sector plate.

4,219,070

APPARATUS FOR WITHDRAWING GAS FROM HEAT EXCHANGER HAVING EXCHANGER TUBES AND METHOD OF WITHDRAWING GAS BY THE APPARATUS

Masahiro Kurokawa, Nara; Noriyuki Oda, and Nobuji Shibamoto, both of Osaka, all of Japan, assignors to Hitachi Shipbuilding & Engineering Company, Ltd., Osaka, Japan

Filed Sep. 27, 1978, Ser. No. 946,150
Claims priority, application Japan, Oct. 5, 1977, 52-120185
Int. Cl.[2] F28D *15/00*
U.S. Cl. 165—11 R **10 Claims**



1. An apparatus for withdrawing non-condensable gas from a heat exchanger divided into an upper heat exchanging chamber and a lower heat exchanging chamber and including a multiplicity of exchanger tubes extending through both the heat exchanging chambers and arranged in a plurality of rows and in a plurality of stages, comprising:

a vertically elongated tank disposed beside the heat exchanger and having retained in its lower portion a liquefied working medium for the exchanger tubes,

lines maintaining the working medium retaining portion of the tank in communication with the lower ends of the exchanger tubes and maintaining the interior space of the tank above the retaining portion thereof in communication with the upper ends of the exchanger tubes, each of the lines being provided with a valve, and

a gas release pipe provided with a valve and connected to the upper portion of the tank.

4,219,071

AIR-CONDITIONING SYSTEM FOR RAILROAD VEHICLES

Giuseppe Careglio; Ettore Restori, and Marcello Pecorini, all of Turin, Italy, assignors to WABCO Westinghouse S.p.A., Turin, Italy

Filed May 26, 1978, Ser. No. 909,884
Int. Cl.[2] B60H *3/04*
U.S. Cl. 165—23 **13 Claims**

1. An air-conditioning system for a passenger-type railway vehicle having a high voltage line to which a source of external electric power is connected, said system comprising:

(a) power supply means including a static converter to which the electric power at the high voltage line is con-

nected for providing alternating current having predetermined nominal values of frequency and voltage;

(b) an air-conditioning unit operative during a normal mode of operation responsive to said predetermined nominal values of frequency and voltage to maintain the interior temperature of said vehicle within a comfort zone, said unit including:

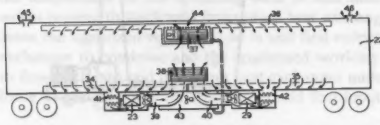
(i) an air duct via which outside air is distributed within said vehicle;

(ii) a cooling unit including a motor-driven compressor, an evaporator in said air duct, and a condenser;

(iii) a heating unit consisting of electrical heating elements in said air duct;

(iv) a plurality of electric circulating fans for forcing the air in said duct over said evaporator and said heating elements; and

(v) a plurality of electric cooling fans for providing a flow of air to cool said condenser, said cooling fans, said circulating fans, said motor-driven compressor, and said



heating unit being operative responsive to the supply of said alternating current by said static converter; and

(c) regulating means for selectively connecting either said motor-driven compressor or said heating elements to said supply of alternating current by said static converter depending upon the existing temperature within said vehicle being above or below said comfort zone, respectively; and

(d) control means for varying said predetermined nominal frequency and voltage in order to operate said cooling fans, said circulating fans, said motor-driven compressor, and said heating unit during an abnormal service mode of operation of said vehicle, such as to rapidly bring the temperature level of said vehicle within said comfort zone; and

(e) said control means including means for sensing an initial start-up of said vehicle in order to establish said abnormal mode of operation provided said regulating means detects the temperature within the vehicle as deviating from said comfort Zone.

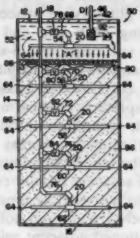
4,219,072

PHASE CHANGE MATERIAL HEAT EXCHANGER

Donald W. Barlow, Sr., Rte. 3, Box 295, Dover, Fla. 33527

Filed Feb. 10, 1978, Ser. No. 876,672
Int. Cl.[2] F28D *15/00*
U.S. Cl. 165—32 **17 Claims**

1. A phase change material heat exchanger, said heat exchanger comprising: container means defining a substantially closed volume; heat transfer fluid inlet means disposed in fluid communicating relation with the interior of said container means, said inlet means comprising a plurality of discharge heads serially connected to said inlet means by a corresponding plurality of discharge conduits, said inlet means further comprising N-1 check valve means, wherein N equals the number of said plurality of discharge heads, one of said check valve means being disposed in fluid flow regulating position upstream of each of said plurality of discharge heads other than the one of said plurality of discharge heads positioned in closest proximity to the bottom of said interior, each of said check valve means including adjustment means whereby each of said valve means is adjustable to open at a predetermined pressure; a phase change material placed within said container means, said phase change material being utilized in sufficient quantity to fill at least most of said container means; heat transfer fluid outlet means disposed in fluid communicating relation with the interior of said container means, said outlet means being in spaced apart relation to said inlet means; and a heat transfer fluid flowing from said inlet means through said phase change material to said outlet means, the settings of said adjustment



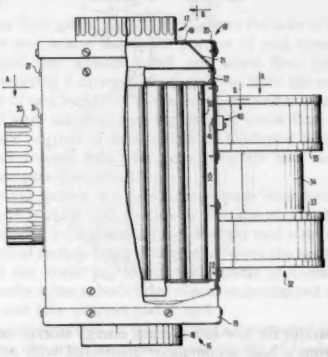
means being graduated so that said heat transfer fluid will flow from but one of said discharge heads dependent upon the physical state of said phase change material, whereby an exchange of heat energy may take place between said phase change material and said heat transfer fluid.

4,219,073

HEAT SAVER DEVICE

Michael J. Talmadge, R.D. #1, Saratoga Springs, N.Y. 12866; Arthur C. Salvatore, Jr., 1255 Lowell Rd., Schenectady, N.Y. 12308, and Anthony Garafalo, Clifton Park, N.Y., assignors to Arthur C. Salvatore, Jr., Schenectady and Michael Talmadge, Saratoga Lake, both of, N.Y.

Filed Jan. 16, 1978, Ser. No. 869,739
Int. Cl.[2] F28D *15/00*
U.S. Cl. 165—39 **9 Claims**



1. A heat exchange device for extracting waste heat from furnace exhaust gases and transferring the heat to a stream of ambient air providing a source of additional heat, and comprising:

a hollow casing enclosed at opposite ends by a pair of identically shaped end connectors, each of which includes an aperture formed therethrough;

said hollow casing further including a plurality of side walls with one side wall having a pair of spaced apertures extending therethrough, with said casing also including a further side wall having an aperture formed therethrough;

a pair of spaced manifold plates extending through said

hollow casing and including a plurality of corresponding apertures formed through both said manifold plates;

each of said side walls further includes opposite end portions having a substantially S-shaped configuration, wherein a portion of one of said end connectors and a portion of one of said manifold plates are each inserted into a pair of separate channels formed in one of said S-shaped end portions, with a plurality of spaced attachment means releasably fastening both said and connector and said manifold plate to said respective S-shaped end portion;

a plurality of separate tubular conduits extending through said casing, with each conduit passing through a corresponding pair of apertures formed in said manifold plates;

said tubular conduits forming a plurality of separate, staggered rows each extending across said hollow casing, wherein each of the tubular conduits in one row intrudes between a pair of adjacent tubular conduits positioned in an adjacent row to increase the time it takes the ambient air stream to travel through said hollow casing;

a fan assembly positioned adjacent said casing including a tubular passageway surrounding at least one of said two apertures formed through said one side wall; and

temperature sensing means attached to said casing for actuating said fan assembly only when the ambient air within said casing exceeds a predetermined temperature.

4,219,074

METHOD AND APPARATUS FOR LOW-LOSS STORAGE OF THERMAL ENERGY AND FOR LOW-LOSS WITHDRAWAL OF THE STORED THERMAL ENERGY

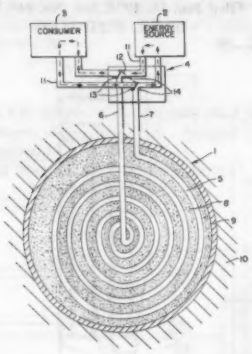
Uwe Hansen, Am Mühlenberg 1, Schwabstedt, Fed. Rep. of Germany (2251)

Filed Jan. 6, 1978, Ser. No. 867,431

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1977, 2700822

Int. Cl.² F28D *21/00*

U.S. Cl. 165—45 **9 Claims**



1. Apparatus for low-loss thermal energy storage and withdrawal from a heat accumulator connected with an energy source and a heat consumer, comprising a pipeline having flow medium disposed therein and being wound layer-wise into a ball-like structure, the windings of said pipeline having an intermediate spacing, a heat storage mass disposed in said intermediate spacing, said pipeline having two ends, one of which is located at the outer periphery of said ball-like structure and the other of which is located at the center of said ball-like structure, a first pipeline union connected to said one end of said pipeline, and a second pipeline union connected to said other end of said pipeline, and means for guiding the flow medium from the energy source through said pipeline from the center to the periphery of said ball-like structure and for subsequently guiding said flow medium through said pipeline from the periphery to the center of said ball-like structure and to the heat consumer, whereby thermal energy is transferred from the energy source to the heat storage mass and from the heat storage mass to the consumer.

4,219,075

HEAT STORAGE DEVICE

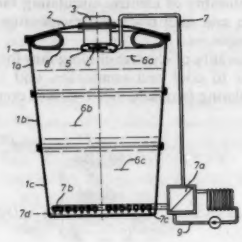
Ingeborg Laing, Hofener Weg 35-37, D 7141 Aldingen, Fed. Rep. of Germany

Filed Jun. 10, 1977, Ser. No. 805,561

Claims priority, application Austria, May 4, 1977, 3176/77

Int. Cl.² F28D *21/00*

U.S. Cl. 165—104 S **17 Claims**



1. A heat storage device having a storage vessel, a fluid flow circuit external to and in fluid communication with said vessel, a heat storage mass in said vessel adapted to store heat in the course of its transition from a solid to a molten state, and a heat carrier liquid substantially immiscible with said storage mass disposed in said vessel for circulation through said vessel and said circuit and having a specific gravity different from the specific gravity of the storage mass when in the molten state; the improvement comprising in having a pump including a rotor positioned in said vessel to circulate heat carrier liquid through said circuit and drive means for said rotor whereby when said rotor is driven during heat discharge of the device, a mixture of said molten storage mass and said heat carrier liquid is sucked into said pump where said rotor reduces the molten storage mass into a plurality of small droplets which solidify upon transferring their heat to said heat carrier liquid and whereby said solidified droplets are moved by gravity and centrifugal forces imparted by said rotor away from said rotor towards the sides of said vessel.

4,219,076

HEAT TRANSFER SYSTEM

Glen P. Robinson, Jr., 1050 Mt. Paran Rd., NW., Atlanta, Ga. 30327

Division of Ser. No. 615,343, Sep. 22, 1975, Pat. No. 4,119,143. This application Mar. 2, 1978, Ser. No. 882,609

Int. Cl.² F28D *21/00*; 28D *15/00*

U.S. Cl. 165—104 S **3 Claims**

1. A heat transfer system comprising:

a first heat storage tank;

a second heat storage tank;

a first heat storage fluid in said first heat storage tank;

a second heat storage fluid in said second heat storage tank;

a heat sink means for receiving heat including an operating fluid to be heated;

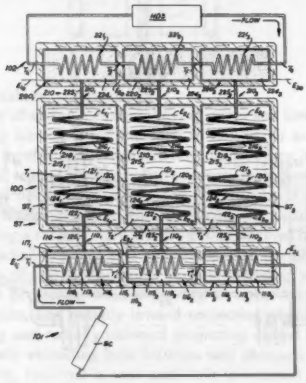
a working fluid having a prescribed vaporization temperature and pressue range;

an input heat exchange means including a first input heat exchanger and a second input heat exchanger, said first input heat exchanger carrying said working fluid therein in a heat exchange relationship with said first heat storage fluid and located at a first input elevation, and said second input heat exchanger carrying said working fluid therein in a heat exchange relationship with said second heat storage fluid and located at a second input elevation; and

an output heat exchange means including first output heat

exchanger and a second output heat exchanger, said second output heat exchanger serially connected with said first output heat exchanger to said heat sink means so that the operating fluid of said heat sink means passes serially through said first and second output heat exchangers, said first output heat exchanger located at a first output elevation higher than said first input elevation and said second output heat exchanger located at a second output elevation higher than said second input elevation;

said first input heat exchanger operatively connected to said first output heat exchanger for placing the vaporized working fluid from said input heat exchanger in a heat exchange relationship with the operating fluid in said heat sink means to that heat from said first heat storage fluid is transferred to the operating fluid in said heat sink means through said first output heat exchanger as long as the temperature of said first heat storage fluid is above the working fluid vaporization temperature and higher than the temperature of the operating fluid of said heat sink means passing through said first output heat exchanger to cause the vaporized working fluid in said first output heat exchanger to condense and the condensed working fluid to flow back into said first input heat exchanger under the force of gravity for revaporization in said first input heat



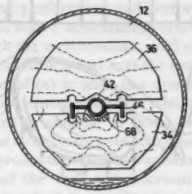
exchanger while heat is prevented from being transferred from the operating fluid to said first heat storage fluid when fluid passing through said first heat exchanger is greater than the temperature of said first heat storage fluid, and said second input heat exchanger operatively connected to said second output heat exchanger for placing the vaporized working fluid from said input heat exchanger in a heat exchange relationship with the operating fluid in said heat sink means so that heat from said second heat storage fluid is transferred to the operating fluid in said heat sink means through said second output heat exchanger as long as the temperature of said second heat storage fluid is above the vaporization temperature and higher than the temperature of the operating fluid of said heat sink means passing through said second output heat exchanger to cause the vaporized working fluid in said second output heat exchanger to condense and to flow back to said second input heat exchanger under the force of gravity for revaporization in said second input heat exchanger while heat is prevented from being transferred from the operating fluid to said second heat storage fluid when the temperature of the operating fluid is greater than the temperature of said second heat storage fluid.

4,219,077

MULTITUBULAR HEAT EXCHANGER USED IN A POWER PLANT

Masahiro Furukawa, Tokyo, and Yoshikuni Ohshima, Hitachi, both of Japan, assignors to Hitachi, Ltd., Japan

Filed May 24, 1978, Ser. No. 909,068
Claims priority, application Japan, May 27, 1977, 52/61030
Int. Cl.[2] F28B 9/10; F28F 9/22
U.S. Cl. 165—114 **5 Claims**



1. A multitubular heat exchanger used in a power plant comprising:

a shell forming therein a steam condensing compartment and a steam inlet at an upper portion of the steam condensing compartment,

a bundle of U-shaped heat transfer tubes located within the steam condensing compartment for heat-exchanging between feedwater flowing therethrough and steam introduced into the steam condensing compartment through the steam inlet,

a vent tube located between an upper portion and a lower portion of said bundle of U-shaped heat transfer tubes and arranged in the longitudinal direction of said shell for collecting noncondensable gas through a hole of said vent tube from the steam condensing compartment,

a plurality of tube support plates arranged within the steam condensing compartment with predetermined intervals in longitudinal direction of said shell for supporting said bundle of U-shaped heat transfer tubes and said vent tube, and

a steam flow guide plate located above the hole of said vent tube and below the upper portion of said bundle of U-shaped heat transfer tubes, said steam flow guide plate obstructing a downward steam flow from the upper portion of said bundle of U-shaped heat transfer tubes toward said vent tube and forming upward steam flow from the lower portion of said bundle of U-shaped heat transfer tubes toward said vent tube, wherein said steam flow guide plate comprises:

a vertical section for preventing steam flow between the upper portion and the lower portion of said bundle of U-shaped heat transfer tubes toward said vent tube, said vertical section being arranged between the upper portion and the lower portion of said bundle of U-shaped heat transfer tubes at both sides of said vent tube and supported by said tube support plates, and

a horizontal section for obstructing a downward steam flow from the upper portion of said bundle of U-shaped heat transfer tubes toward said vent tube, said horizontal section being located between said vertical sections and supported by said vertical section.

4,219,078

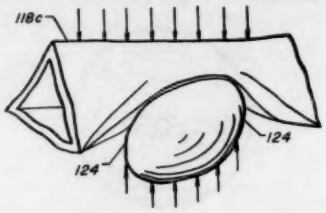
HEAT TRANSFER SURFACE FOR NUCLEATE BOILING

James G. Withers, Jr., Decatur, Ala., assignor to UOP Inc., Des Plaines, Ill.

Filed Dec. 4, 1978, Ser. No. 966,438
Int. Cl.[2] F28F 13/02
U.S. Cl. 165—133 **1 Claim**

1. A metal heat transfer member having at least one nucleate boiling surface which is adapted to be exposed to a boiling medium, said at least one surface being coated with a layer of

an at least partially hollow non-particulate reticulated metal structure which is in intimately bonded thermally conducting relationship to said at least one surface, said hollow reticulated metal structure being shell-like and skeletal so as to define a plurality of hollow metal strands having spaced apart openings along the length thereof, at least some of said hollow metal strands having at least one deformation in the surface thereof



intermediate said spaced apart openings, said deformations causing a reduction in the internal diameter of the hollow metal strands at discrete points along the length of the deformed strands relative to the portions of the deformed strands on either side of the deformations such that there exists a reduction in the amount of liquid which can flow internally of a hollow strand as compared to a similarly sized strand that is not deformed.

4,219,079

PLATE TYPE CONDENSER

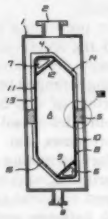
Hiroyuki Sumitomo, Takatsuki, Japan, assignor to Hisaka Works, Ltd., Osaka, Japan

Division of Ser. No. 836,996, Sep. 27, 1977, Pat. No. 4,184,542. This application Apr. 9, 1979, Ser. No. 28,189

Claims priority, application Japan, Oct. 1, 1976, 51-118700; Oct. 19, 1976, 51-125699; Apr. 16, 1977, 52-43997; Apr. 16, 1977, 52-43998

Int. Cl.³ F28B 9/02; F28D 9/00; F28F 3/10, 9/22

U.S. Cl. 165—159 **2 Claims**



1. A plate type condenser wherein a plurality of heat transmitting plates vertically assembled in side-by-side contacted relation with a gasket disposed between adjacent heat transmitting plates to define therebetween suitably opened steam passages are solely supported by seal stays and enclosed in a shell, wherein said stays divide said shell into an upper and a lower portion and said stays and the gaskets between adjacent plates are contacted and cooperate with each other to provide a steam seal construction between the heat transmitting plates and the shell, thereby sealing said upper portion from said lower portion.

4,219,080

PLATE-TYPE HEAT EXCHANGER

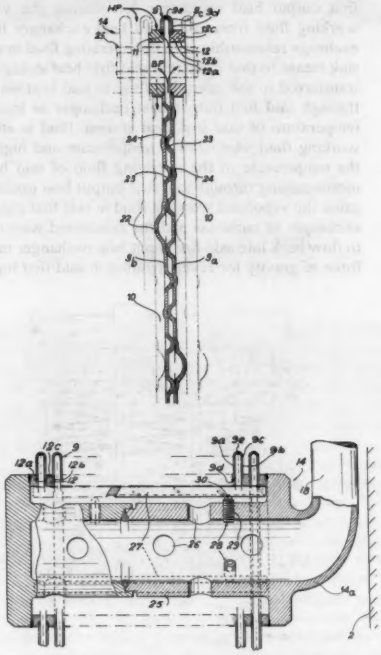
Jean-Edmond Chaix, Manosque; Maurice Fajeau, Pertuis; Paul Madamour, and Christian Masnou, both of Paris, all of France, assignors to Commissariat a l'Energie Atomique and Fives-Cail Babcock, both of Paris, France

Filed May 9, 1978, Ser. No. 904,219

Claims priority, application France, May 16, 1977, 77 14887

Int. Cl.³ F28F 3/02

U.S. Cl. 165—166 **9 Claims**



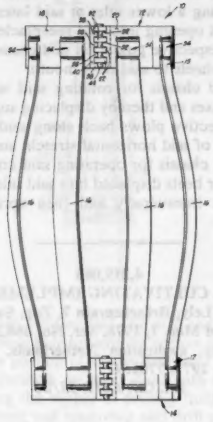
1. A plate-type heat exchanger comprising a plurality of flat parallel compartments each delimited between two adjacent plates and separated by narrow spaces, a first fluid being circulated within said narrow spaces during normal operation in order to exchange heat across said plates with a second fluid which flows through said compartments, wherein the spacing between two adjacent compartments is provided by means of a spacer ring having a T-shaped cross-section, said cross-section being provided with two side arms and a stem, each spacing ring being located between two plates belonging to two adjacent compartments, the side arms of the T being engaged in and welded to the edges of opposite orifices formed in two parallel plates forming part of two adjacent compartments, the stem of the T being directed towards the exterior of said spacer ring and disposed between said plates, said orifices having edges on which said arms are welded, the lengths of said side arms being substantially equal to the thickness of a plate, the interior of said spacer rings forming a passage between two adjacent compartments, the association of said spacer rings forming a header for the second fluid which passes through the compartments, the spacing between the plates within the space formed between the two compartments being further ensured by spacer members within said space, and a tubular support extending through all the spacer rings forming an internal support for said rings.

4,219,081

KNOCKDOWN CENTRALIZER

Thomas W. Howe, Duncan, Okla., assignor to Halliburton Services, Duncan, Okla.

Filed Nov. 3, 1978, Ser. No. 957,552
Int. Cl.[2] E21B 17/10
U.S. Cl. 166—241 31 Claims



1. A centralizer, comprising:

a plurality of spring members, having upper and lower ends;

upper and lower collars, attached to said upper and lower spring member ends, respectively, said collars including first and second arcuate collar portions, each of said collar portions having first and second peripheral end portions, said first peripheral end portion of said first collar portion including a radially outward projecting channel having an open radially inward side and said second peripheral end portion of said second collar portion including a radially inward projecting channel having an open radially outward side, said radially inward projecting channel overlapping said radially outward projecting chanel to define an axially extending hole between said channels; and

a latch pin, received in said axial hole to connect said first and second collar portions.

4,219,082

LIGNOSULFONATE-FORMALDEHYDE CONDENSATION PRODUCTS AS ADDITIVES IN OIL RECOVERY PROCESSES INVOLVING CHEMICAL RECOVERY AGENTS

George Kalfoglou, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Mar. 23, 1979, Ser. No. 23,128
Int. Cl.[2] E21B 43/22
U.S. Cl. 166—273 15 Claims

1. In a method for recovering oil from a subterranean formation containing oil and having an injection well and a production well wherein a chemical recovery agent is injected into the injection well in order to drive the oil to the production well wherein it is produced the improvement which comprises:

injecting into the injection well in admixture with the chemical recovery agent lignosulfonate-formaldehyde condensation products wherein the lignosulfonate-formaldehyde condensation products are present in an amount effective for reducing the extent of adsorption of the surfactant by the formation matrix.

4,219,083

CHEMICAL PROCESS FOR BACKSURGING FLUID THROUGH WELL CASING PERFORATIONS

Edwin A. Richardson, Houston; Ronald F. Scheuerman, Bellaire, and David C. Berkshire, Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Apr. 6, 1979, Ser. No. 28,025
Int. Cl.[2] E21B 21/00
U.S. Cl. 166—300 6 Claims

1. A chemical well treating process for backsurging fluid through well casing perforations and perforation tunnels that interconnect a well with a subterranean reservoir, comprising:

injecting through the well conduits, well casing perforations and perforation tunnels and into the reservoir an aqueous liquid solution of (a) at least one compound which contains at least one nitrogen atom to which a hydrogen atom is attached and is capable of being oxidized within an acidic aqueous solution to yield nitrogen gas and dissolved or liquid by-products which are substantially inert to the components of the well and reservoir, (b) at least one oxidizing agent which is capable of so-oxidizing the nitrogen containing the compound, (c) an alkaline buffer which is capable of maintaining said solution at a pH of at least about 7 at which the rate of the gas-generating reaction is relatively slow while a significant proportion of hydrogen ions are being released within the solution, and (d) a pH-reducing reactant which is capable of subsequently overriding the buffer and reducing the pH of the solution to a value less than about 7 at which the rate of the gas-generating reaction is relatively fast;

correlating the composition of said aqueous solution with the pressure and temperature of the reservoir and the rate at which fluid can be injected through the perforation tunnels into the reservoir so that (a) the buffer-reduced rate of said gas-generation and the rate of said buffer-overriding is slow enough to permit a significant volume of the gas-generating solution to be injected into the reservoir before the rate of the gas-generating reaction becomes relatively fast and (b) the kind and amount of the nitrogen-containing compound and oxidizing agent are such that a significant amount of gas and heat are generated after the rate of the gas-generating reactions becomes relatively fast;

injecting a significant volume of said gas-generating solution into the reservoir at least substantially as soon as its rate of reaction becomes relatively fast; and,

allowing fluid to be produced from the well.

4,219,084

FIRE EXTINGUISHING APPARATUS HAVING A SLIDABLE MASS FOR A PENETRATOR NOZZLE

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Norris C. Gray, Melbourne; Robert M. Senseny, Titusville, and Philip N. Bolton, Cape Canaveral, all of Fla.

Filed Apr. 19, 1978, Ser. No. 897,840
Int. Cl.[3] A62C 35/12
U.S. Cl. 169—70 1 Claim

1. A fire extinguishing apparatus for delivering an extinguishing agent from a remote source through a barrier surrounding a structure into the interior thereof comprising:

(a) a single elongated tubular nozzle body;
(b) a pointed penetrating head carried on one end of said tubular nozzle body;
(c) passages extending through said tubular nozzle body adjacent said head communicating with the interior of said tubular nozzle body;
(d) a hose for supplying said extinguishing agent to the other end of said tubular nozzle body;
(e) a coupling for connecting said hose to said other end of said tubular nozzle body;
(f) an abutment carried on the exterior of said tubular nozzle body adjacent the central portion of said tubular nozzle body;
(g) a manually movable slidable elongated tubular mass having an axial bore extending therethrough of a diameter slightly larger than the diameter of said tubular body concentrically carried on said tubular nozzle body between said abutment and said other end; and
(h) a separate handle attached to said tubular nozzle body formed of "U" shaped members extending radially from said body, said handle being positioned on the opposite side of said abutment from said slidable mass whereby said fire extinguishing apparatus can be supported by said handle with one hand while the other hand of an operator can be used to manipulate said slidable mass,

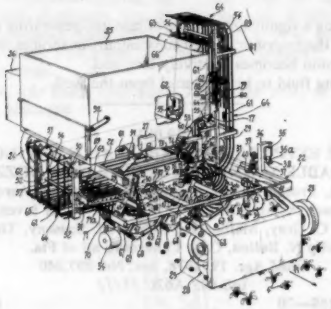
whereby by moving said slidable mass along said tubular nozzle body while maintaining said penetrating head in contact with said barrier the axial force imparted to said penetrating head upon said mass striking said abutment causes said head to penetrate said barrier for delivering said extinguishing agent into said structure.

4,219,085

MULTIROW SUGAR-BEET HARVESTER

Remo Bonfatti, and Lorenzo Bonfatti, both of Via Ferrarese 454, Stellata di Bondero, Italy

Filed Aug. 3, 1978, Ser. No. 930,525
Claims priority, application Italy, Aug. 5, 1977, 3527 A/77; Feb. 7, 1978, 46813 A/78
Int. Cl.[2] A01D *27/04*
U.S. Cl. 171—101 **8 Claims**



1. A machine for harvesting sugar beets growing in at least two longitudinally extending and generally parallel rows, said machine comprising:

a chassis displaceable along the ground longitudinally of said rows and carrying a receptacle for receiving sugar beets;

at least two pairs of extractor plows transversely spaced from each other on said chassis at a transverse spacing corresponding generally to that of said rows and engageable in the ground under said chassis;

means on said chassis for displacing same along the ground and thereby digging up the sugar beets in said rows with said plows;

at least two respective grillwork wheels rotatable on said chassis about respective nonvertical axes adjacent said pairs of plows and each generally tangent to one of the plows of the respective pair, each of said wheels being vertically superposed with the adjacent wheel and lying in a respective longitudinally extending plane inclined to the vertical;

a conveyor on said chassis having a horizontal stretch having a forwardly open transversely elongated inlet mouth behind said wheels and a lateral outlet, and a vertical stretch having a lower inlet at said lateral outlet and an upper outlet opening into said receptacle;

at least two respective guides on said chassis and extending from said wheels to said inlet mouth;

means on said chassis for rotating said wheels about the respective axes and thereby displacing sugar beets dug up by the respective plows back along said guides into the inlet mouth of said horizontal stretch; and

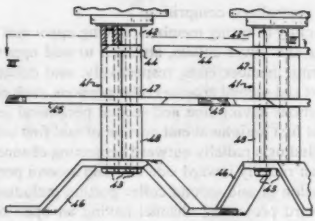
means on said chassis for operating said conveyor for conveying sugar beets displaced into said inlet mouth by said wheels first transversely and then vertically into said receptacle.

4,219,086

SOIL CULTIVATING IMPLEMENTS

Cornelis van der Lely, Brüschenrain 7, Zug, Switzerland

Filed Mar. 7, 1978, Ser. No. 884,202
Claims priority, application Netherlands, Mar. 7, 1977, 7702396; Mar. 7, 1977, 7702397
Int. Cl.[2] A01B *33/06*
U.S. Cl. 172—59 **6 Claims**



1. A soil cultivating implement comprising at least one soil working member that is rotatable about an upwardly extending axis and driving means connected to rotate said member, said member comprising an upwardly extending carrier and at least three elongate soil working elements interconnected to the carrier intermediate the ends of said elements, said elements being arranged one above the other and the spacing between said elements decreasing when viewed downwardly and along said axis of rotation, the lowermost soil working element having a portion extending obliquely downwardly and said portion merging into a further portion which extends substantially perpendicular to said axis.

4,219,087

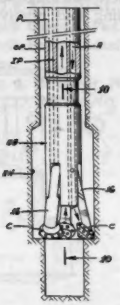
ENLARGED BORE HOLE DRILLING METHOD

Gary R. Johnson, Yorba Linda, Calif., assignor to Tri State Oil Tool Industries, Inc., Bossier City, La.

Division of Ser. No. 854,132, Nov. 23, 1977. This application Jan. 18, 1979, Ser. No. 4,403
Int. Cl.[2] E21C *7/06*
U.S. Cl. 175—65 **8 Claims**

1. The method of drilling enlarged bore holes in earth formation comprising: drilling a pilot hole into the earth formation by rotating a pilot bit on a dual pipe string having an outer fluid path defined between inner and outer pipes, while circulating drilling fluid through the bit causing drilling fluid and cuttings to flow from the pilot hole through the space between the pipe string and the bore hole wall; halting the circulation of drilling fluid and removing the pipe string and pilot bit from the bore

hole; replacing the pilot bit with a bore hole enlarging bit having cutters expansible to a gauge in excess of the gauge of the pilot bit; moving the enlarging bit on the drill pipe to a selected location in the pilot hole spaced from the bottom of the pilot hole; expanding said enlarging bit cutters by supplying drilling fluid through said outer fluid path of said drill pipe



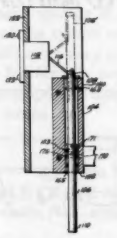
to said enlarging bit; rotating said drill pipe and enlarging bit to drill an enlarged bore hole toward the bottom of said pilot hole while removing a portion of the drilling fluid and cuttings of earth formation through an inner fluid path defined by said inner pipe; ceasing the supply of drilling fluid; retracting the enlarging bit cutters; and removing said drill pipe and enlarging bit from the enlarged bore hole.

4,219,088

LOAD INDICATOR

Orville H. Finney, 14850 SW. 280th St., #32 Innkeeper Ln., Homestead, Fla. 33032

Filed Oct. 12, 1978, Ser. No. 950,783
Int. Cl.[2] G01G *19/08*
U.S. Cl. 177—138 **6 Claims**



1. For registering the weight of a load as it is applied to a truck having a frame, and a wheel suspension connected to the frame, a load indicator device comprising:

a housing fixed to the frame and defining a piston rod chamber,

a piston rod in the chamber having a first and a second end extending from the chamber, the first end of the rod being within the path of movement of the truck suspension as the load is applied to the truck, and the rod being free to move toward the frame in response to the applied load,

air valve means attached to the chamber,

the piston rod having first and second ends, the second end including an undercut rod head, the rod head including an annular groove with an O-ring,

the chamber includes an upper and a lower end, both ends having guide means thereby closing the chamber when the rod is in the chamber,

the rod head is captivated between the closed upper and lower ends of the chamber, spring means are provided to normally urge the piston rod's first end to an extended position beyond the chamber,

the electrical circuit includes solenoid means for opening and closing the air valve, when the valve is opened, air is allowed into the chamber applying pressure to the O-ring and piston rod head, thereby forcing the rod upward and out of contact with the truck suspension,

a sensor mounted on the housing, having a swingable arm in the path of movement of the first end of the rod, and

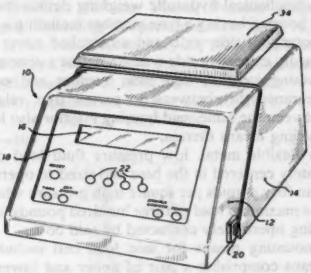
electrical means including a guage in series with the sensor for detecting movement of the swingable sensor arm, thereby enabling the user to determine the weight of the load applied to the truck.

4,219,089

ELECTRONIC COUNTING SCALE

Eric A. Gard, Lancaster, and James S. Bryan, Harrisburg, both of Pa., assignors to Pennsylvania Scale Company, Leola, Pa.

Filed Oct. 6, 1978, Ser. No. 950,841
Int. Cl.[2] G01G *13/14, 19/04, 21/00*
U.S. Cl. 177—165 **12 Claims**



1. A counting scale for determining and indicating the number of articles in a collection of substantially identical said articles; comprising in combination:

a weighing platform for receiving said collection of articles;

load cell means actuated by said platform for generating an analog signal indicative of the force exerted on said platform by said collection of articles;

A-to-D conversion means for receiving said analog signal, and converting same to a digital signal indicative of said force, and thereby of the number of articles in said collection;

means for generating and storing a digital signal indicative of the tare weight acting at said load cell;

means for subtracting said signal indicative of the said tare weight from said signal indicative of the number of articles in said collection, to thereby normalize said latter digital signal;

means for generating and storing a digital signal indicative of the weight per unit article of a predetermined size group of said articles;

means for dividing said normalized digital signal by said stored weight per unit value to determine the said number of articles;

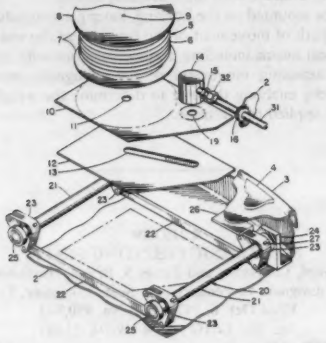
means for displaying the thereby determined number of said articles; and

manually actuatable means for periodically updating said stored value for said weight per unit article to reflect the number of articles on said platform at the time of effecting said updating, said means being operable to effect said updating for any accumulated number of said articles.

4,219,090
WEIGHING DEVICE

Arnold J. Dayton, 12718-37th Ave. NE., Seattle, Wash. 98125

Filed Apr. 13, 1979, Ser. No. 29,565
Int. Cl.[2] G01G 5/04
U.S. Cl. 177—208 4 Claims



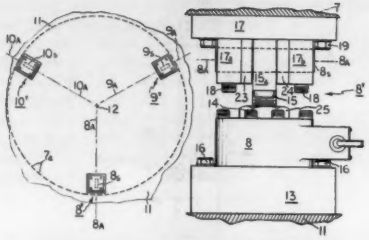
1. A mechanical-hydraulic weighing device comprising:
(a) a housing having a base member including a bottom with upstanding side walls and a detached cover with downwardly extending side walls to define a generally enclosed housing interior, said base member and cover having clearance therebetween to permit free, relative motion between the same, said housing interior also having cover leveling means therein,
(b) a flexible metal, low pressure fluid load cell approximately centered in the base and sized to operate with less than fifty pounds per square inch pressure when subjected to a maximum load of three hundred pounds, said load cell being operatively contacted by said cover,
(c) mounting means for said load cell including conduit means comprising a pair of upper and lower plates, the lower of which has an elongated slot and the upper of which has holes registering with each end of said slot, one hole registering with and connected to said load cell and the other registering with and connected to said connector post to form a fluid path,
(d) connector post means attached to said mounting means and including fitting means for attaching a hose thereto,
(e) a hose assembly attached to said connector post means, and
(f) a weight indicator housing containing a hydraulically actuated assembly and indicator, and a dial divided into weight increments for visual reading of said indicator with respect to said dial.

4,219,091
TRANSDUCER MOUNTING

Robert J. Kleinhans, Canton, Mass., assignor to Bofors America, Inc., Edison, N.J.

Filed Oct. 26, 1978, Ser. No. 954,914
Int. Cl.[2] G01G 21/08
U.S. Cl. 177—211 8 Claims

1. Apparatus responsive to weight of a load-carrying structure comprising a plurality of transducers which characterize forces applied substantially vertically between two relatively-deflectable portions thereof, said transducers being disposed between said load-carrying structure and an underlying support in an array of positions angularly spaced about a common position, coupling means for coupling one of the said portions of each of said transducers to said support, and coupling means for coupling the other of the said portions of each of said transducers to said load-carrying structure, one of said coupling means for each of at least two of said transducers including a substantially horizontal shaft having its longitudinal axis aimed at said common position and sleeve bearing means mated about and slidable relative to said shaft, the said shaft and the said sleeve bearing means for each said one of said coupling means being respectively fixed with one of said portions of one of said transducers and with one of said structure and support and thereby preventing relative lateral movement therebetween in relation to said longitudinal axis, whereby said coupling means including said relatively-slidable shaft and

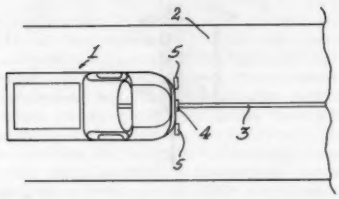


bearing means transmit weight-related vertical forces through said transducers and yet allow expansions and contractions to slide said coupling means along the longitudinal axes of the shafts thereof without imposing significant related forces on said transducers and at the same time, together with said transducers, lock said structure and support against other relative lateral and angular movements without any by-passing of forces through auxiliary stay rods and the like.

4,219,092
AUTOMATIC GUIDANCE APPARATUS

Wolfdieter Richter, P.O. Box 6144, Dunswart, Transvaal, South Africa

Filed Feb. 18, 1977, Ser. No. 770,027
Claims priority, application South Africa, Feb. 28, 1976, 75/5471
Int. Cl.[2] B62D 1/28
U.S. Cl. 180—169 9 Claims



1. Apparatus suitable for automatically guiding a moving object relative to a predetermined path defined by a stripe of material capable of emitting, upon X-ray irradiation thereof, secondary X-ray waves characteristic of said material comprising:
radiation means mountable on the object for irradiating the path with electromagnetic waves of a wavelength chosen within the X-ray spectrum to cause excitation and emission of secondary X-ray waves of a predetermined wavelength from the stripe defining the path;
two detectors located in a spaced-apart relationship on the object, the detectors being selectively responsive to the intensity of the characteristic secondary X-ray waves emitted from said stripe;
comparison means connected to the detectors for comparing the detector outputs and providing an output signal related to the intensities of the detected characteristic secondary X-ray waves; and

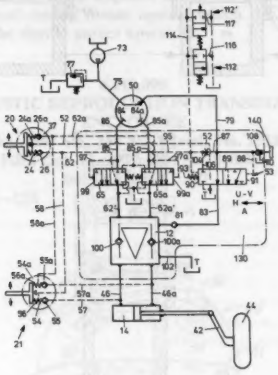
servo means connected to the comparison means for adjusting the direction of movement of the object relative to the path in accordance with the output signal received from the comparison means.

4,219,093

VEHICLE STEERING ASSIST

Armin Lang, Schwabisch Gmund, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Fed. Rep. of Germany

Filed Aug. 4, 1978, Ser. No. 931,092
Int. Cl.[2] B62D *5/06, 1/28*
U.S. Cl. 180—131 **19 Claims**



19. In a power assisted steering system having a hand steering device (**50**) operable in a manual mode of operation, signal operated means (**12**) operable in an automatic mode of operation and mode selector means (**140**) for selectively switching operation of the system between said manual and automatic modes, the improvement residing in control means (**130**) for stabilizing operation of the system only in the manual mode and override means (**65**) responsive to manual actuation of the hand steering device for forcibly switching operation of the system from the automatic to the manual mode independently of the mode selector means.

4,219,094

STRADDLE CRANE APPARATUS

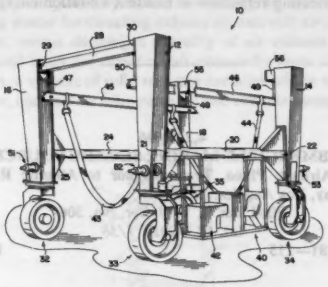
James D. Sturgill, Roxboro, N.C., assignor to RPC Corporation, Roxboro, N.C.

Filed Nov. 9, 1978, Ser. No. 959,071
Int. Cl.[2] B60P *1/02*; B66C *5/02*
U.S. Cl. 180—236 **34 Claims**

1. In a multi-wheeled straddle vehicle having two pairs of load bearing columns with casters at the lower ends thereof, the improvement comprising:

a torsion member having a cross section defining a closed geometric figure connecting each member of one pair of columns with a corresponding member of the other pair of columns by means of gussets at each end of said torsion member, the structure and size of said torsion member providing sufficient torsional and bending resistance to support downward and inward loads applied to said load bearing columns; and

a header beam member having an open cross section and a tubular center, said header beam member being sized and dimensioned to provide sufficient buckling resistance and being sufficiently flexible to provide for movement of the casters over and in contact with uneven terrain without producing unacceptable shear stresses in said header beam member, said header beam member connecting the members of one pair of load bearing columns at an upper portion thereof.

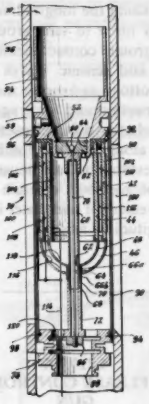


4,219,095

ACOUSTIC TRANSDUCER

Jean-Claude Trouiller, Gif sur Yvette, France, assignor to Schlumberger Technology Corporation, New York, N.Y.

Continuation of Ser. No. 799,900, May 23, 1977, abandoned, and a continuation of Ser. No. 594,404, Jul. 8, 1975, abandoned. This application Jul. 3, 1978, Ser. No. 921,928
Claims priority, application France, Jul. 10, 1974, 74 23921
Int. Cl.[2] G01V *1/40*
U.S. Cl. 181—104 **28 Claims**



1. A transducer for emitting into or receiving from a surrounding medium acoustic waves, comprising the combination of:

a substantially cylindrical hollow body subject to vibration in radial and longitudinal directions with respect to its axis;

electrode means, coupled to cylindrical surface regions of said hollow body, for providing a vibration exciting electric field in said surface regions in response to an applied signal or detecting an electric field in said surface regions in response to the impact of acoustic energy;

means, secured to an axial end of said hollow body, for effecting acoustic energy coupling of said hollow body, with said surrounding medium in directions of vibration which are in addition to said radial and longitudinal directions, and which additional directions are non-parallel and

having a directivity pattern substantially symmetrical to the axis of the hollow body; and

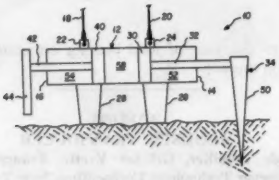
means, secured to the other axial end of said hollow body, for effecting reflection of incident vibration energy.

4,219,096

SUBMERGIBLE MARINE SEISMIC SOURCE

Tom P. Airhart, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jan. 2, 1979, Ser. No. 306
Int. Cl.[3] G01V *1/38*
U.S. Cl. 181—113 1 Claim



1. A device for propagating seismic waves in a marine bottom comprising a submergible cylindrical housing having enclosed forward and aft ends, a ground contact member operatively interconnected with said device and adapted to penetrate said marine bottom, means for generating a force within said housing along the longitudinal axis thereof, means for transmitting said force to said ground contact member, thereby urging said ground contact member in the direction of said axis, whereby said seismic waves may be propagated within said marine bottom, and means movable independently of said housing for reacting said force against the surrounding water, said means including a force reaction member movable within said housing along said longitudinal axis and a water interacting member external to said housing rigidly connected to said force reaction member, wherein the center of water resistance to the movement of said water interacting member is offset from said longitudinal axis.

4,219,097

EXTERNAL AIR RELEASE CONTROL IN SEISMIC AIR GUN

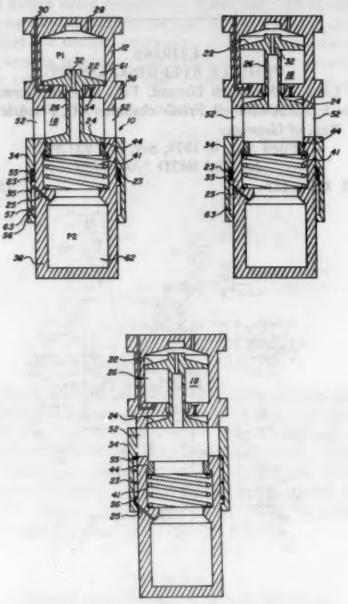
Earnest R. Harrison, Plano, and Roy C. Johnston, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 4, 1979, Ser. No. 26,977
Int. Cl.[2] G01V *1/38, 1/14*
U.S. Cl. 181—120 9 Claims

1. A seismic energy source apparatus having a housing defining at least one exhaust port and an inner chamber for storing compressed air, and containing a shuttle having first and second pistons disposed generally parallel to each other at opposite ends of a shaft with an orifice therethrough, having a first air supply means for providing compressed air to the chamber and having a second air supply means controlled by actuating means for supplying air pressure under the first piston to cause the shuttle to move upwardly, comprising:

(a) seating means disposed within the chamber against which the first piston seats;

(b) resilient seating means disposed within the chamber against which the second piston seats; and



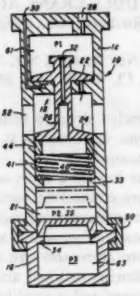
(c) an exterior sliding valve slidably mounted to the exterior surface of the housing, actuable upon the shuttle moving upwardly to slide upwardly and cover the exhaust port.

4,219,098

INTERNAL PASSIVE AIR RELEASE CONTROL APPARATUS IN SEISMIC AIR GUN

John T Thomson, Dallas, and Roy C. Johnston, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 5, 1979, Ser. No. 27,199
Int. Cl.[2] G01V *1/38, 1/14*
U.S. Cl. 181—120 15 Claims



1. A seismic energy source apparatus having a housing defining at least one exhaust port and an inner chamber for storing compressed air and containing a shuttle having first and second pistons disposed generally parallel to each other at opposite

ends of a shaft with an orifice therethrough, having a first air supply means for providing compressed air to the chamber and having a second air supply means controlled by actuating means for supplying air pressure under the first piston to cause the shuttle to move upwardly, comprising:

(a) first seating means disposed within the chamber against which the first piston seats;

(b) resilient seating means disposed within the chamber against which the second seats at one end;

(c) a plate positioned within the chamber;

(d) second seating means disposed within the chamber against which the resilient seating member bears from above and against which the plate seats from below when actuated by the shuttle moving upwardly; and

(e) third seating means disposed within the chamber, below the second seating means against which the plate seats before the shuttle moves upwardly.

4,219,099

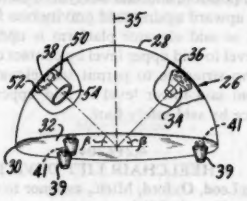
ACOUSTIC REPRODUCTION TRANSDUCER ENCLOSURE

Bernard Sacks, 7640 SW. 143 St., Miami, Fla. 33158

Filed Oct. 11, 1977, Ser. No. 840,857

Int. Cl.² H05K 5/00

U.S. Cl. 181—153 **4 Claims**



1. In a loud speaker system of the type having a loud speaker for the reproduction of sound, said loud speaker being attached to an enclosure, the improvement comprising:

(a) said enclosure having a concave substantially reflecting inner surface;

(b) the shape of said inner surface defining for a source point of acoustical energy on its inner surface one and only one virtual source point of acoustical energy on said inner surface, said virtual source point being spaced from its corresponding source point;

(c) said inner surface being a concave reflecting hemisphere connected at its extremity and enclosed by a substantially plane reflecting plate;

(d) a hole through said enclosure centered at a selected source point;

(e) said selected source point being located in said hemisphere angularly intermediate of said plane reflecting plate and its pole;

(f) means for sealingly mouting said loud speaker aligned with said hole;

(g) said corresponding virtual source point being located 180° horizontally about said pole from said source point and as the same elevation angle above said plate at said source point; and

(h) a port in said enclosure, said port being located at said virtual source point.

4,219,100

MUFFLER FOR EXHAUST AIR OR OTHER GAS

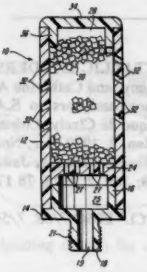
Harold G. Wyse, 3629 N. Dixie Dr., Dayton, Ohio 45414

Filed Feb. 16, 1979, Ser. No. 12,852

Int. Cl.² F01N 1/10

U.S. Cl. 181—230 **6 Claims**

1. In an air exhaust muffler for controlling noise produced by air exhausting from an air actuated device, said muffler including a body having a tubular portion defining a media chamber, means defining an air expansion chamber spaced axially from said media chamber and connected to said media chamber by a plurality of generally axially extending air inlet passages, coupling means for directing exhaust air into said air expansion chamber, means defining a plurality of air exhaust passages within said body for directing air outwardly from said media chamber, a volume of solid separate particles within said media chamber, and said air inlet passages and exhaust passages being



sufficiently smaller than said particles to confine said particles within said media chamber as the air flows through said media chamber, the improvement wherein said particles comprise particles of a hydrophobic plastics material and fill only a portion of said media chamber to provide an air space, and said air space is effective to provide for substantial relative movement between adjacent said particles in response to the flow of air through said media chamber to maintain the air flow passages between adjacent said particles and to effect abrasive self-cleaning of the particles.

4,219,101

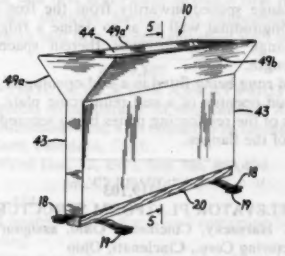
ACOUSTIC SPACE DIVIDER

Donald J. Valsvik, Stillwater, Minn., assignor to Conwed Corporation, St. Paul, Minn.

Filed Jun. 12, 1978, Ser. No. 914,958

Int. Cl.² E04B 1/82

U.S. Cl. 181—286 **7 Claims**



1. A free-standing sound-absorbing structure comprising:

a. A substantially vertical acoustic screen panel;

said acoustic screen comprising a frame, a decorative fabric covering layer on each face thereof and sound absorbent material in the interior thereof;

b. said panel section being from about 4 to about 6 feet in height;

c. said panel section being substantially rectangular and having a base along the lower longitudinal edges thereof;

d. legs affixed to said base effective to provide a free-standing support for said panel section;

e. two angled projections, each one being along substantially the entire length of the opposed upper longitudinal edges of said panel section whereby each said angled projection is disposed horizontally when the sound absorbing structure is in the free-standing position; and

f. each said projection being acoustic and being inclined upward and outward from its longitudinal edge of the panel section at an effective angle from about 30 to about 60 degrees from the vertical and for an effective length of at least about 5% of the height of the vertical panel section.

4,219,102

METALLIC LADDERS

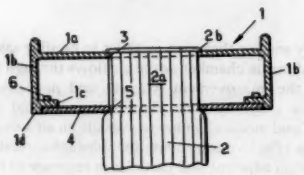
Pierre Ducresot, Guerigny, and Catherine Archer, Villennes sur Seine, both of France, assignors to S.A.R.L. dite: F.M.C. Fabrications Metallique de Cizely, Colombes, France

Filed Jan. 2, 1979, Ser. No. 79

Claims priority, application France, Jan. 2, 1978, 78 00588; Apr. 17, 1978, 78 11808; Jun. 2, 1978, 78 17233; Nov. 24, 1978, 78 34039

Int. Cl.[2] **E06C** *7/08, 7/50*

U.S. Cl. 182—220 **12 Claims**



1. A metal ladder comprising

two spaced stiles of open section,

a plurality of rungs extending between the stiles, and having a shoulder at each end, and

reinforcing plates each receiving an end portion of a rung in an opening thereof, and each including

tab means,

each said stile having

a web, with openings for the rungs,

two longitudinal walls, one wall extending from each edge of the web, and each longitudinal wall having

a flange spaced inwardly from the free edge of the longitudinal wall so as to define a ridge, each said flange having apertures therein spaced along its length,

each said rung being fitted in a said opening of the web and in a said opening of a said reinforcing plate, and the tab means of the reinforcing plates being secured in the apertures of the flanges.

4,219,103

ELEVATOR PLATFORM STRUCTURE

Thomas P. Harsacky, Cincinnati, Ohio, assignor to Leyman Manufacturing Corp., Cincinnati, Ohio

Filed Jul. 3, 1978, Ser. No. 921,591

Int. Cl.[2] **B60S** *13/00*

U.S. Cl. 187—8.49 **5 Claims**

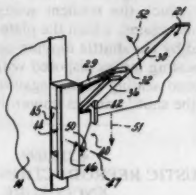
1. An improved elevator platform structure comprising

an elevator platform horizontally carried within a framework, said elevator platform being movable within said framework between a lower level and an upper level,

a lifting device connecting said elevator platform and said framework, said lifting device being adapted to raise and lower said horizontal elevator platform between said upper and lower levels as desired by an operator,

a pivotable ramp at one end edge of said platform, said ramp being pivotable on an axis between a first position at which said ramp is substantially horizontal with said elevator platform, and a second position at which said ramp is vertically upraised relative to said elevator platform, and

a safety foot connected with said framework, said safety foot being pivotable about a pivot axis oriented generally parallel to the ingress/egress path of said elevator platform, said safety foot being automatically and continually biased downward by gravity into an active position at which said



foot engages said ramp as said elevator platform is lowered from said upper level to said lower level to pivot said ramp from said horizontal position toward said vertically upraised position, and said safety foot being automatically pivoted upward against said gravity bias from said active position as said elevator platform is upraised from said lower level to said upper level by contact of said foot with said ramp structure to permit said elevator platform to pass from said lower level to said upper level without hindrance by said safety foot.

4,219,104

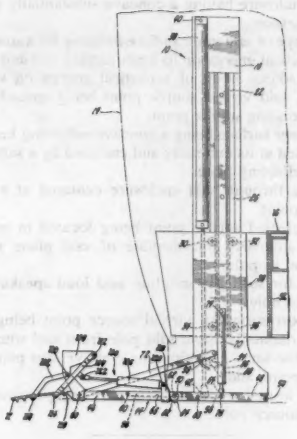
WHEELCHAIR LIFT DEVICE

Brian H. MacLeod, Oxford, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 3, 1978, Ser. No. 948,101

Int. Cl.[2] **B66B** *9/20*

U.S. Cl. 187—9 R **3 Claims**



1. In combination with a wheelchair lift device having front and rear hinged sections that are foldable through a support linkage to form steps located entirely within the stepwell of a vehicle for use by able-bodied persons and are extendible relative to the stepwell so as to align the hinged sections along a horizontal plane to form a platform for supporting the wheelchair, means connected to said hinged sections for moving the latter vertically when formed as a platform so the wheelchair

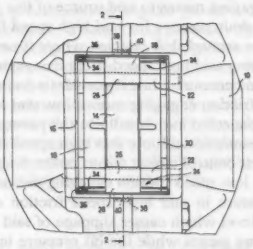
may leave and enter the vehicle, a ramp carried by said front section for facilitating movement of the wheelchair to and from said front and rear sections when the latter are formed into said platform and are located at ground level, a mechanism including a pair of non-parallel links pivotally connected to said ramp and to said front section for controlling orbital movement of the latter about said front section from a first position wherein said ramp is stored beneath and adjacent to said front section to a second position wherein said ramp is located in substantial horizontal alignment with said front section to facilitate said movement of the wheelchair to and from the platform and to a third position wherein the ramp is disposed forwardly of and at an elevation above the front section and in a plane that is inclined relative to the plane of said front section so as to prevent the wheelchair from rolling off the platform, and power-operated means connected to one of said links for moving said ramp from said first position to said second and third positions.

4,219,105

DISC BRAKE AND A NOISE-REDUCING SPRING FOR SUCH A BRAKE

Jean Delaunay, Drancy, France, assignor to Societe Anonyme D.B.A., Paris, France

Filed Apr. 30, 1979, Ser. No. 34,530
Claims priority, application France, May 11, 1978, 78 13976
Int. Cl.[2] F16D 65/00
U.S. Cl. 188—73.5 **2 Claims**



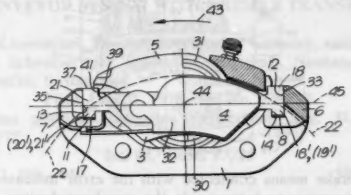
1. In a disc brake, a disc mounted for rotation with a member to be braked, said disc defining a pair of opposed friction faces, a pair of friction elements disposed adjacent said friction faces for engagement therewith when a brake application is effected, a fixed support member straddling said disc and supporting said friction elements, fluid pressure responsive means carried by said fixed support for urging said friction elements against said friction faces, said fixed support defining an opening receiving said friction elements, said opening having a pair of opposed edges facing corresponding edges on the friction elements, one edge of one of the friction elements cooperating with a corresponding edge of the opening to define a gap therebetween, a mounting pin carried by said fixed support for supporting said friction elements in said opening, and a noise reducing spring cooperating with the friction elements and said fixed support, said spring including a pair of resilient arms movable relative to each other, said spring defining an aperture receiving said mounting pin so that the mounting pin supports said spring for rotation around said mounting pin from an inoperative position in which the spring is supported by said mounting pin with the arms of the spring disposed away from said gap to an operative position in which the arms of the spring are disposed in said gap, said arms yieldably engaging said corresponding edge of the opening and said one edge of the friction element respectively when the spring is disposed in said operative position, said one edge of said opening defining a recess, said spring including a tab projecting into said recess when the spring is disposed in the operative position to thereby prevent rotation of said spring out of the operative position.

4,219,106

BRAKE SHOE HOLDING DEVICE FOR A SPOT-TYPE DISC BRAKE

Hans-Henning Lüpertz, Darmstadt, and Vlad Marianu, Frankfurt-Griesheim, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Claims priority, application Fed. Rep. of Germany 2804808
Filed Jan. 11, 1979, Ser. No. 2,494
Int. Cl.[3] F16D 65/09
U.S. Cl. 188—73.6 **12 Claims**



1. A brake shoe holding device for a spot-type disc brake comprising:

two support members spaced apart from each other in the direction of a secant relative to a brake disc;

each of said support members having at least a first groove therein parallel to the rotational axis of said brake disc and disposed on one side of said brake disc to slidably guide a first brake shoe in the direction of brake application and to positively connect said first brake shoe to both of said support members in the peripheral direction of said brake disc such that at least in the presence of increased brake-applying forces the frictional force occurring at said first brake shoe is transmitted to both of said support members;

each of said first grooves being open radially outwardly to receive an associated end of said first brake shoe and having a first wall surface extending from within the outer periphery of said brake disc to a point outside the outer periphery of said brake disc, a second wall surface parallel to said first wall surface disposed between said first wall surface and the center of said brake disc wholly within the outer periphery of said brake disc, and a third wall surface disposed at right angles to and interconnecting said first and second wall surfaces within the outer periphery of said brake disc; and

each end of said first brake shoe having a first radially inwardly directed shoulder having first supporting surfaces slidably engaging said first, second and third wall surfaces.

4,219,107

SPEED CONTROL DEVICE FOR A HEAVY DUTY SHAFT

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Allen G. Ford, Pasadena, Calif.

Filed Dec. 13, 1977, Ser. No. 860,404
Int. Cl.[2] B60T 7/12
U.S. Cl. 188—134 **4 Claims**

1. A speed control device for a load sustaining heavy duty shaft comprising:

A. a reference speed shaft spatially related to a heavy duty shaft;

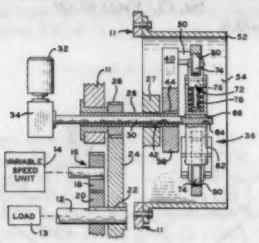
B. a variable speed drive motor coupled to said heavy duty shaft for imparting a first angular velocity to the heavy duty shaft independent of any sustained load thereon and a constant speed drive motor coupled to said reference speed shaft for imparting a reference angular velocity to the reference speed shaft; and

C. speed control means connected to the heavy duty shaft for maintaining a fixed relationship between the angular velocities imparted to the shafts, including:

(1) an error indicator shaft for indicating the instantaneous angular velocity of said heavy duty shaft comprising a

tubular shaft concentrically related to said reference speed shaft;

(2) means including a gear train interconnecting said error indicator shaft and said heavy duty shaft for maintaining the angular velocity of the error indicator shaft and the angular velocity of the heavy duty shaft in a fixed proportional relationship; and



(3) brake means connected with the error indicator shaft responsive to increases in the angular velocities of the heavy duty shaft, relative to the angular velocity of the reference speed shaft, for restraining the error indicator shaft against angular displacement for thereby reducing the angular velocity of the heavy duty shaft.

4,219,108

THIRD RAIL SYSTEM FOR TRACK BOUND TRANSPORT MEANS

Hermann Döring, Neunkirchen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Nov. 17, 1977, Ser. No. 852,595

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1976, 2654073

Int. Cl.[2] B60M *1/26*

U.S. Cl. 191—29 R **3 Claims**

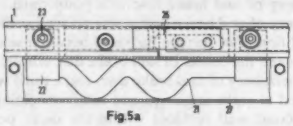


Fig.5a

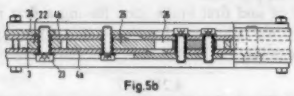


Fig.5b

1. In a third rail system for a track bound transport means having at least one third rail of double "T" shaped cross section on which a collector shoe slides, the third rail being supported on a slide bed with support insulators and containing fixed joints and expansion joints at predetermined spaces, the improvement comprising:

(a) the third rail having a web with an internal longitudinal slot extending from the base of said third rail for receiving mechanical connecting parts and electrical connecting and joining parts;

(b) an electrical jumper at each expansion joint, said electrical jumper having strap-like cable lugs on each end, said strap-like cable lugs being disposed in the slots and bolted to webs of the two third rail ends being joined;

(c) a single fishplate at each of said expansion joints disposed entirely within the slot of said third rail between said strap-like cable lugs, said fishplate being slidably secured to the webs of the two third rails being joined, and

(d) the support insulators including projections disposed in the slot for guiding said third rail.

4,219,109

OIL PRESSURE CONTROL MEANS FOR AN AUTOMATIC TRANSMISSION

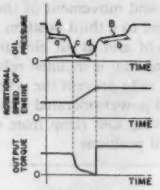
Fumihiro Ushijima; Kagenori Fukumura, and Keiichi Ito, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Feb. 21, 1978, Ser. No. 879,884

Claims priority, application Japan, Feb. 14, 1977, 52-14749

Int. Cl.[2] F16D *25/10*

U.S. Cl. 192—87.13 **7 Claims**



1. An oil pressure control means for an automatic transmission having a gear mechanism and low and high speed friction engaging means and adapted to provide alternatively two speed shift stages by changing over engagement of said two friction engaging means, comprising: a source of line pressure; a shift valve adapted to be shifted between a first shift position where it provides a passage for connecting said low speed friction engaging means to said source of line pressure while it provides a drain passage for said high speed friction engaging means and a second shift position where it provides a passage for connecting said high speed friction engaging means to said source of line pressure while it provides a drain passage for said low speed friction engaging means; low and high speed accumulators connected individually to the passages for supplying the line pressure to said low and high speed friction engaging means; a first control circuit means controlling by the oil pressure in said low speed friction engaging means so as to reduce the oil pressure in said high speed friction engaging means down to a level which causes slippage of said high speed friction engaging means while the oil pressure in said low speed friction engaging means rises but is still maintained at a level which permits slippage of said low speed friction engaging means; and a second control circuit means controlled by the oil pressure in said high speed friction engaging means so as to increase the oil pressure in said low speed friction engaging means up to a level which causes substantial engagement of said low speed friction engaging means when the oil pressure in said high speed friction engaging means lowers down to a level which causes substantial disengagement of said high speed friction engaging means.

4,219,110

WAFER PROBE APPARATUS WITH PNEUMATIC WAFER ORIENTING MECHANISM

Hirohiko Ubukata, 1-6-828, Oshima 1-chome, Koto-ku, Tokyo, Japan

Filed Jul. 27, 1978, Ser. No. 928,711

Claims priority, application Japan, Sep. 8, 1977, 52-108076; Sep. 8, 1977, 52-108077

Int. Cl.[2] B65G *47/24*

U.S. Cl. 198—380 **14 Claims**

1. In apparatus for testing integrated circuits or the like fabricated within and upon semiconductor wafers each having an orientation recess formed therein, in combination:

(a) a table having a wafer mounting surface on which the wafers are loaded one at a time and which is gold-plated and crinkled to diffusedly reflect light falling thereon;

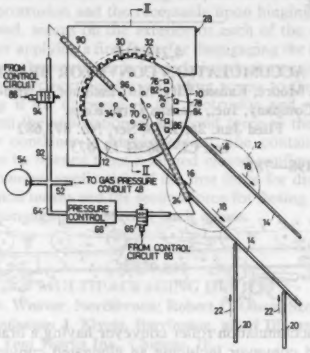
(b) means for holding the loaded wafer in a predetermined position on the table;

(c) means for revolving the loaded wafer substantially about

its own axis relative to the table by application of a gas under pressure;

(d) light source means for irradiating the wafer being revolved or the wafer mounting surface of the table depending upon the angular position of the orientation recess in the wafer;

(e) photodetector means responsive only to the light emitted from the light source means and reflected diffusedly from the wafer mounting surface of the table and so capable of sensing the fact that the orientation recess in the wafer is



turned to a predetermined angular position on the table, the photodetector means being operatively associated with the revolving means for causing same to terminate the application of the gas under pressure to the wafer when the orientation recess therein is turned to the predetermined angular position on the table; and

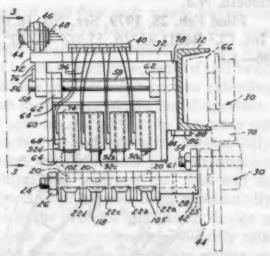
(f) means operatively associated with the photodetector means for adhering the wafer to the table by suction when the orientation recess in the wafer is turned to the predetermined angular position on the table.

4,219,111

POWER AND FREE CONVEYOR CONTROL SYSTEM

Bernard J. Allor, Jr., Mount Clemens, Mich., assignor to Taylor & Gaskin Inc., Detroit, Mich.

Filed Mar. 2, 1978, Ser. No. 882,650
Int. Cl.[2] B65G *47/46*
U.S. Cl. 198—355 **19 Claims**



1. A control system for a conveyor having a plurality of moving bodies, such as trolley carriers, movable along the path of travel, comprising:

at least one latching type reed switch mounted on each moving body where the switch latches open in response to a magnetic field in one direction and latches closed in response to a magnetic field in a second direction, the switch maintaining the latched position impressed by one of the magnetic fields until encountering the other magnetic field;

means along the path of the moving bodies for sensing the latched condition of each reed switch as it passes thereby; and

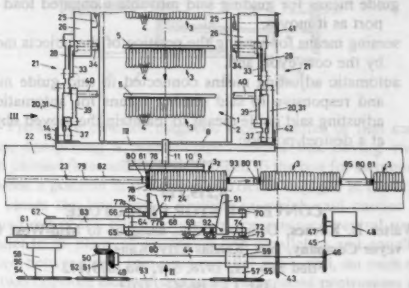
magnet means associated with each of the switches along the path of the moving bodies upstream of the first mentioned means for selectively inducing magnetic fields of said first or second directions over the path of said associated reed switch.

4,219,112

CONVEYOR SYSTEM WITH ARTICLE TRANSFER APPARATUS

Horst Loewenthal, Tiengen, Fed. Rep. of Germany, assignor to SIG Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Aug. 31, 1978, Ser. No. 938,490
Claims priority, application Switzerland, Aug. 31, 1977, 10632/77
Int. Cl.[3] B65G *47/26*
U.S. Cl. 198—449 **10 Claims**



1. In a conveyor system for advancing groups of edgewise positioned flat articles, including a first conveyor having an outlet end; a second conveyor disposed at the outlet end of the first conveyor and being oriented transversely thereto; a transfer apparatus including a transfer pusher for sequentially moving the article groups from the outlet end of the first conveyor onto the second conveyor; and carriers forming part of the second conveyor and arranged for sequentially engaging and advancing the article groups subsequent to their arrival on the second conveyor; the improvement comprising an article group accelerating means including an accelerating pusher for engaging and accelerating the article groups on said second conveyor along the conveying direction thereof prior to engagement and conveyance of the respective article groups by said carriers of said second conveyor.

4,219,113

CONVEYOR FOR MOVING HEAVY DENSE OBJECTS

Arthur H. Fieser, 9888 W. Moccasin Trail, Wexford, Pa. 15090, and Loreley S. Mobley, 4634 Sebald Dr., Franklin, Ohio 45005

Filed Jun. 16, 1978, Ser. No. 915,984
Int. Cl.[2] B65G *25/02*
U.S. Cl. 198—774 **18 Claims**

1. A conveyor for moving heavy dense objects comprising:

a fixed elongated load support having two fixed spaced apart support surfaces, defining a longitudinal passage therebetween, positioned above the floor;

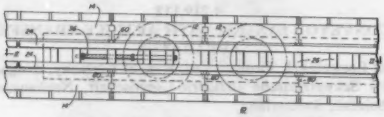
a movable elongated load support, disposed between the two fixed support surfaces of said fixed elongated load support, movable between a raised position above said fixed elongated load support and a lowered position beneath said fixed elongated load support;

an upper plate secured to the bottom of said movable elongated load support;

a lower plate disposed beneath said upper plate;

air bearing means disposed between said upper plate and said lower plate for providing low friction relative movement between said upper plate and said lower plate when activated;

drive means connected to said movable elongated load support for reciprocating said movable elongated load support only when said air bearing means is activated;



lift units connected beneath said lower plate for raising and lowering said lower plate which in turn raises and lowers said second movable load support;

guide means for guiding said movable elongated load support as it moves;

sensing means for sensing the position of the objects moved by the conveyor; and,

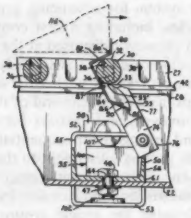
automatic adjusting means connected to said guide means and responsive to said sensing means for automatically adjusting said guide means to maintain the moved objects at a desired position.

4,219,114

CONVEYOR STOP STRUCTURE

Walter B. Kovacs, Orange, Calif., assignor to Mid-West Conveyor Company, Inc., Kansas City, Kans.

Filed Feb. 21, 1978, Ser. No. 879,442
Int. Cl.[2] B65G *13/02*
U.S. Cl. 198—780 **15 Claims**



1. In a powered conveyor having a plurality of laterally disposed, elongated rollers forming an article conveying path tangent to the upper surfaces of said rollers and having said rollers driven by at least one endless belt normally engaging the bottom surface of said rollers, a stop structure comprising:

(a) conveyor frame members having shiftable roller support means associated with a roller and permitting shifting of said roller between a belt engaging position and a belt disengaged position;

(b) a combination article stop and roller disengaging device associated with said conveyor;

(c) said device including a lift arm having a first end thereof pivotally connected with said frame at a pivot point spaced apart from and generally below the conveying path, and a second end thereof having an article stop portion which extends through said conveying path when said device is in said article stopping position;

(d) said device further including a roller lifting cam mounted on and pivoting with said lift arm, and engaging an associated roller when said device is in said article stopping position for shifting said roller to said belt disengaged position; and wherein

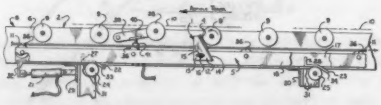
(e) said lift arm pivot point is positioned downstream of the lift arm second end, such that said stop portion engages the leading edge of an oncoming article, whereby the kinetic energy of said article pivots the lift arm in a downstream direction thereby arresting the forward motion of the article at a predetermined position, and simultaneously engaging the lifting cam with said associated roller and disengaging the roller from the belt to reduce conveyor drag.

4,219,115

ACCUMULATION CONVEYOR BRAKE

Archie S. Moore, Kansas City, Mo., assignor to Mid-West Conveyor Company, Inc., Kansas City, Kans.

Filed Jan. 26, 1978, Ser. No. 872,682
Int. Cl.[2] B65G *13/075*
U.S. Cl. 198—781 **17 Claims**



1. An accumulation roller conveyor having a brake mechanism, said conveyor including an elongated conveyor frame with article carrying rollers positioned thereon to define an article conveying surface, said conveyor receiving articles from an upstream direction and conveying same in a downstream direction, said brake mechanism comprising:

(a) a brake frame disposed below said article carrying rollers and movable in an inclined direction generally upward to a non-braking position and generally downward to a braking position;

(b) a brake pad supported on said brake frame below said article conveying surface and frictionally engaging only one of said article carrying rollers below its axis in said braking position; and

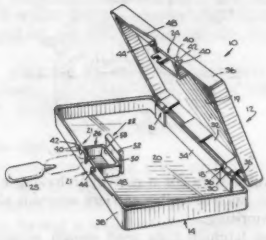
(c) motor means operatively connected to said conveyor frame and to said brake frame and operable to translate said brake frame between said braking position and said non-braking position.

4,219,116

CHILD-RESISTANT CONTAINER AND SAFETY CLOSURE THEREFOR

Florence Borkan, East Orange, N.J., assignor to Pharmacaps, Inc., Elizabeth, N.J.

Filed Feb. 28, 1979, Ser. No. 16,106
Int. Cl.[2] B65D *43/16, 55/02, 45/18, 1/22*
U.S. Cl. 206—1.5 **18 Claims**



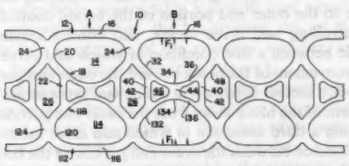
1. A container comprising a lower portion, an upper portion, hinge means hingedly connecting the upper and lower portions, first latch means connected to the upper and lower

container portions adapted to engage upon hinging the container closed, second latch means including a member flexibly connected to one of the container portions and extending into the interior of the container when the container is hinged closed, a protrusion associated with one of the member and the other container portion and receptacle means for the protrusion associated with the other of the member and container portion, said protrusion and said receptacle being disposed within exterior surfaces of the container when the container is hinged closed, the member being adapted to be flexed to engage the protrusion and the receptacle upon hinging the container closed, means on the exterior or each of the container portions for applying a first force for disengaging the first latch means when the container is hinged closed, an opening in one of the container portions for providing access to the member for flexing it for disengaging the protrusion and receptacle means upon the application of a second force to the member when the container is hinged closed, the container being adapted to be opened from a hinged closed configuration by the simultaneous application of the first force for disengaging the first latch means and the second force for flexing the member for disengaging the second latch means.

4,219,117
MULTIPACKAGING DEVICE

William N. Weaver, Northbrook; Robert C. Olsen, Streamwood, and Mindaugas J. Klygis, Barrington, all of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Apr. 18, 1979, Ser. No. 31,231
Int. Cl.[3] B65D *75/00*
U.S. Cl. 206—150 17 Claims

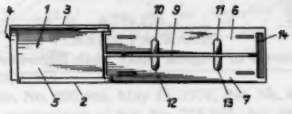


1. In a carrier device for multipackaging a plurality of cylindrical containers in two adjacent rows, said carrier device formed from an elastic plastics sheet material, said carrier device comprising two rows of integrally interconnected bands lying in the plane of said sheet material, each of said bands having a container receiving aperture, the initial circumferential dimension of each aperture being less than the circumferential dimension of the surface of the container intended to be encircled by one of said bands, a plurality of first and second web means, each of said first web means interconnecting one transversely aligned pair of bands in said two rows, each of said second web means interconnecting one longitudinally adjacent pair of bands in each row, each of said bands comprising an outer section and an inner section extending between said second web means creating an initial aperture configuration, said outer sections disposed along the outer side marginal edges of said carrier device presenting substantially a straight line configuration, and said inner sections disposed between said outer sections and between said first and second web means, each of said inner sections being substantially V-shaped in configuration in the plane of said carrier device and defined generally by a pair of legs extending inwardly relative to the outer section and intersecting at an apex region, each of said first web means having a total length overlapping a portion of outer margin of each pair of said legs in the longitudinal direction between said two rows defined by extremities, each extremity interconnecting a pair of opposing legs of transversely aligned inner sections on either side of the apex regions of said transversely aligned inner sections, wherein stretching forces applied in transversely outward opposite directions to transversely aligned outer sections of said bands change the initial aperture configuration and its circumferential dimension to a second aperture configuration having a dimension substantially equal and similar to a complementary cylindrical container adapted to be associated therewith by axial insertion and subsequent encirclement as a result of the first web means transferring the stretching forces to the inner sections in force directions substantially perpendicular to the longitudinal axis of the carrier device.

4,219,118
PROTECTIVE CASE FOR TAPE RECORDING CASSETTES

Giles N. Somers, Genéva, Switzerland, assignor to Claire Corporation AG, Zug, Switzerland

Filed May 16, 1978, Ser. No. 906,414
Claims priority, application Switzerland, May 16, 1977, 6071/77
Int. Cl.[2] B65D *85/54*
U.S. Cl. 206—387 2 Claims

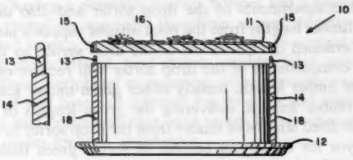


1. Protective case for magnetic tape cassettes or film cassettes, comprising a parallelepiped-shaped box having two main parallel faces and a carrier hinged to the box for swinging between a position in which said carrier is engaged in the box and closes the box, and a position in which said carrier is opened out of the box, said carrier comprising a central wall parallel to its plane of oscillation and parallel to and equally spaced between said two main parallel faces, and, on each of the two opposite faces of said wall, two spaced protrusions to fit into the two hubs of a cassette.

4,219,119
DECORATIVE CAKE CONTAINER

Clara M. Zefran, 1328 Monomoy 10A, Aurora, Ill. 60506

Filed Oct. 31, 1977, Ser. No. 847,225
Int. Cl.[3] B65D *85/00*; G09F *3/10*
U.S. Cl. 206—457 2 Claims



1. A decorative cake container in combination comprising:
a tubular wall section having a wall adapted in tubular wall outline and dimension to specified values for containing a cake,
a multiplicity of index pins angularly disposed at selected positions around the top periphery of said tubular wall section and integrally extending vertically above said top periphery, and,
at least one top cover for said tubular wall section having a planar outline adapted to and conforming to said tubular wall outline, said at least one top cover removable from said tubular wall section, said at least one top cover having permanent three dimensional decorative indicia disposed on the exterior of said top cover, said at least one top cover having a selected exterior area thereon adapted to receive removable decorative indicia, said at least one top cover having multiple index apertures angularly dis-

posed at selected positions around the periphery providing mating index receptacles for said multiple index pins.

4,219,120

METHOD AND APPARATUS FOR HANDLING BOTH GREEN AND DRIED TIMBER LENGTHS

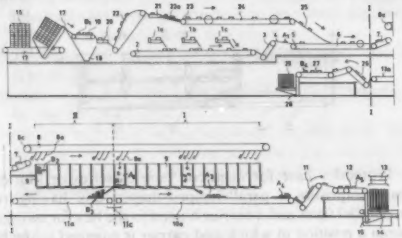
Alpo Rysti, Frisansintie 22, 02240 Espoo 24, Finland

Filed Jan. 5, 1978, Ser. No. 867,155

Claims priority, application Finland, Aug. 11, 1977, 772422; Nov. 1, 1977, 773269

Int. Cl.² B65G *47/19, 57/06*

U.S. Cl. 209—521 **10 Claims**



1. In a method for handling lengths of timber which are both green and dried, the steps of conveying both the green timber lengths and dried timber lengths simultaneously along separate respective paths to a given location, conveying the green and dried timber lengths beyond said given location at least in part along a common path with a conveyor having hook-shaped supports for the timber lengths, which conveyor travels over a drop sorter having compartments into which the lengths of timber are dropped from the hook-shaped supports, arranging the green timber lengths and dried timber lengths alternately on successive ones of the hook-shaped supports which travel over the compartments of the drop sorter, dropping green timber lengths from the hook-shaped supports into predetermined compartments of the drop sorter and also dropping dried timber lengths from the hook-shaped supports into other predetermined compartments of the drop sorter, so that any given compartment of the drop sorter will receive only one type of timber length, namely either green timber lengths of dried timber lengths, delivering the green lengths of timber and the dried lengths of timber from the drop sorter to a batch conveyor for conveying batches of sorted green timber and batches of sorted dried timber, and conveying said batches by way of said batch conveyor to a packaging apparatus including a single, unitary, packaging machine, said packaging apparatus being operated alternately to form from each batch of green timber a green timber package in which layers of green timber are separated by spacers, preparatory to being delivered to a drying unit, while forming at said apparatus from the dried timber batches packages of dried timber which are suitable for further handling and wherein the drop sorter includes one group of compartments for green timber lengths and a second group of compartments for the dried timber lengths while said batch conveyor includes separate conveyors respectively situated beneath said groups for separately conveying the batches of green timber and the batches of dried timber, and including the step of conveying said batches to a location situated between the separate batch conveyors and said groups and then transporting the batches from said latter location along a common path to said packaging machine.

4,219,121

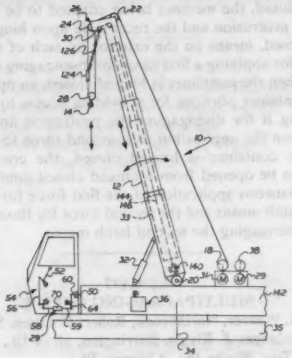
SAFETY SYSTEM FOR USE IN ASSOCIATION WITH MATERIAL HANDLING EQUIPMENT

Garold L. McPeak, Winona, Minn., assignor to Burro-Badger Corporation, Winona, Minn.

Filed Feb. 21, 1978, Ser. No. 879,741

Int. Cl.² G08B *21/00*

U.S. Cl. 212—153 **17 Claims**



1. In a crane having a boom with an outer end portion from which a block is suspended, an apparatus for preventing engagement of the block with the outer end portion of the boom, said apparatus comprising drive means for moving the block relative to the outer end portion of the boom, control means for controlling said drive means, said control means being operable between a first condition in which said drive means effects movement of the block toward the outer end portion of the boom, a second condition in which said drive means effects movement of the block away from the outer end portion of the boom, and a third condition in which said drive means maintains a distance between the outer end portion of the boom and the block constant, detector means for providing a signal when the block is within a predetermined distance of the outer end portion of the boom, and means for effecting operation of said control means from said first condition to another one of said conditions in response to said signal for said detector means to thereby interrupt movement of the block toward the outer end portion of the boom, said control means including actuator means for effecting said operation of the control means, said actuator means including a manually actuatable member, linkage means for connecting said manually actuatable member with said control means, and means for changing the effective length of said linkage means in response to said signal from said detector means.

4,219,122

VEHICLE-MOUNTED CRANE ASSEMBLY

Michael I. Blatchford, The Grange, Midsomer Norton, England

Continuation-in-part of Ser. No. 661,022, Feb. 24, 1976, abandoned. This application Mar. 13, 1978, Ser. No. 886,131

Int. Cl.² B60P *1/54*

U.S. Cl. 212—73 **9 Claims**

1. A vehicle-mounted crane assembly comprising:

(i) a vehicle frame having a longitudinal axis;

(ii) an elongate bolster member extending transversely to the vehicle frame and supported thereby;

(iii) an elongate extension member;

(iv) a hinge connection between the extension member and an end of the bolster member mounting the extension member for swinging movement in a plane transverse to the said longitudinal axis between a horizontal operative position aligned with the bolster member; and an inopera-

tive upwardly inclined position in excess of 90° and up to 130° relative to the horizontal;

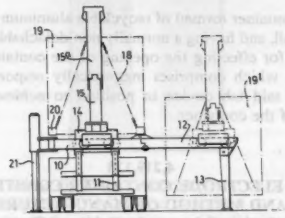
(v) an adjustable leg structure carried by the outer end of the extension member for engagement with the ground when the extension member is in the horizontal operative position;

(vi) a pedestal supported by the bolster member and mounted for traversing movement along the bolster member and along the extension member when the latter is in the horizontal operative position;

(vii) lifting means supported by the pedestal for attachment to a load to be raised or lowered relative to the vehicle frame;

(viii) a hydraulically-actuated linkage for swinging the extension member relative to the bolster member between the operative and inoperative positions of the extension member,

wherein the linkage comprises:



(a) an extendable, contractable hydraulic ram mounted by the extension member, the longitudinal axis of the ram extending lengthwise of the extension member, and the ram having a piston rod with a free end;

(b) an elongate link having a first pivotal connection at one of its ends to the free end of the piston rod and having a second pivotal connection at the other of its ends to the bolster member for swinging of the link about a fixed axis;

(c) elongate guide means mounted by the extension member for guiding the said first pivotal connection; and

(d) whereby during a first part of the swinging movement of the extension member from the horizontal operative position to the inoperative upwardly inclined position, the elongate link is in compression until the extension member has been raised to a position in which its weight, during a second part of the swinging movement, causes a force reversal so that the elongate link is in tension.

4,219,123

COUPLER FOR TOY AND MODEL RAILWAY CARS

Jiro Saeki, Tokyo, Japan, assignor to Tomy Kogyo Co. Inc., Tokyo, Japan

Filed Nov. 1, 1977, Ser. No. 847,430

Int. Cl.[3] B61G *1/08;* A63H *19/00*

U.S. Cl. 213—75 TC **12 Claims**

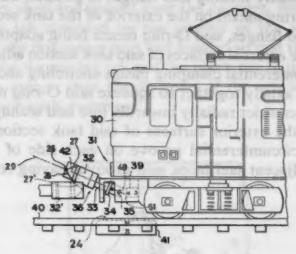
1. A coupler for connecting toy railway cars comprising:

support means secured to an end of a car;

a coupler knuckle pivotally mounted on said support means for pivotal motion between a lower position in which the longitudinal axis of said coupler knuckle is substantially parallel to a track way and an upper position in which the longitudinal axis of said coupler knuckle is inclined relative to the trackway;

first magnet means carried by said coupler knuckle and having its polar axis alined substantially parallel to the trackway when the coupler knuckle is in its lower position; and

second magnet means fixed on the car and positioned relative to said first magnet means to magnetically attract said



first magnet means and to thereby urge said coupler knuckle to said lower position.

4,219,124

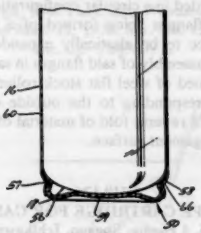
PLASTIC PACKAGE

Stephen W. Amberg, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 905,686, May 15, 1978, Pat. No. 4,187,276, which is a continuation of Ser. No. 705,868, Jul. 16, 1976, abandoned. This application Apr. 20, 1979, Ser. No. 31,808

Int. Cl.[2] B65D *23/08*

U.S. Cl. 215—12 R **12 Claims**



1. A package comprising an uprightly unstable thermoplastic bottle having a generally convex bottom and a peripheral sidewall extending upwardly therefrom, a base directly contacting and loosely supporting said bottle in an upright position, and pre-decorated, heat shrunk, annular label means in tight unitizing peripheral engagement with externally exposed surfaces of said base and sidewall for securely and integrally attaching said bottle and base, said means being substantially the sole means for such attachment.

4,219,125

TANK CLOSURE ASSEMBLY

Arthur J. Wiltshire, Richmond Heights; Harry R. Nara, Novelty; Edward T. LeBreton, Mentor, and Ward L. Bliley, Chesterland, all of Ohio, assignors to Structural Fibers, Inc., Chardon, Ohio

Continuation-in-part of Ser. No. 754,830, Dec. 27, 1976, Pat. No. 4,133,442. This application Dec. 7, 1978, Ser. No. 967,208

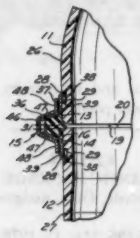
The portion of the term of this patent subsequent to Jan. 9, 1996, has been disclaimed.

Int. Cl.[2] B65D *7/02, 7/42*

U.S. Cl. 220—5 A **6 Claims**

1. A molded, fiber-reinforced, plastic split tank assembly comprising a pair of tank sections having mating faces at a transverse plane, the sidewalls of each tank section having a substantially uniform outside diameter in a zone adjacent its respective face, a nonintegral, circumferential, external flange

on each tank section adjacent the face thereof, said flanges each being formed separately from the sidewalls of the tanks, means for axially locking said flanges in position on said tank sections, O-ring means on the exterior of the tank sections and between said flanges, said O-ring means being adapted to sealingly engage external surfaces of said tank section adjacent said faces, circumferential clamping means encircling and drawing said flanges axially together to squeeze said O-ring means and cause it to constrict radially inwardly into said sealing engagement with the exterior surfaces of said tank sections, means defining a circumferential groove on each side of said tank sidewalls adjacent said faces, said grooves having rearwardly



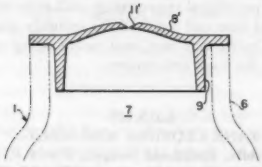
facing abutment surfaces, said flanges having portions extending into said grooves including surfaces in engagement with said abutment surfaces, interengagement between said flanges and said grooves providing said axial locking means, said flange being provided in a circular configuration with a single, radial split, said flanges being formed of a material having sufficient resilience to be elastically expanded radially outwardly to permit assembly of said flanges in said grooves, said flanges being formed of steel flat stock rolled into a circular configuration corresponding to the outside diameter of the tank sections, and a reverse fold of material of said steel stock forming said engagement surface.

4,219,126

SAFE CARTRIDGE FOR GAS

Katsuo Oana, 17-6, 4 chome, Sugano, Ichikawa-shi, Chiba-ken, Japan

Filed Mar. 29, 1979, Ser. No. 25,061
Int. Cl.³ B65D *25/00*
U.S. Cl. 220—89 A **3 Claims**



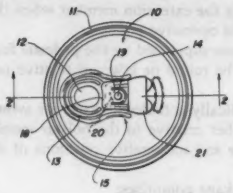
1. A cartridge assembly for containing gas, said cartridge being formed of a cylinder and a sealing plate, said plate serving to control the passage of gas out of said cylinder when excessive pressure is developed within said cartridge, including: a body, and said sealing plate positioned at the top of said body, said plate being formed with a recess disposed along a central portion thereof, and being responsive to the formation of excessive pressure within cylinder, to bow outwardly across its entire width, until the deformation of said plate under pressure is complete, said recess under pressure being rupturable within a limited area, to cause venting of the gas from within said cylinder at a relatively slow and controlled rate of emission.

4,219,127

MAGNETICALLY RESPONSIVE TAB FOR ALUMINUM CONTAINERS

Lucian C. Bielicki, Ridgefield, Conn., assignor to Muni Recovery Systems, Inc., White Plains, N.Y.

Filed Aug. 27, 1979, Ser. No. 69,898
Int. Cl.³ B65D *41/32*
U.S. Cl. 220—269 **9 Claims**



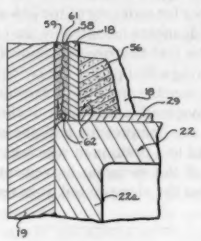
1. In a container formed of recyclable aluminum in the body and end wall, and having a normally non-detachable aluminum tab device for effecting the opening of the container, the improvement which comprises magnetically responsive means applied to said tab device in position to achieve magnetic recovery of the container.

4,219,128

SULFUR ELECTRODE CONTAINER CONSTRUCTION AND METHOD OF MANUFACTURE

Manfred W. Breiter, Schenectady; Debajyoti Chatterji, Latham; Randall N. King, Johnstown, and Dong-Sil Park, Schenectady, all of N.Y., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Division of Ser. No. 837,381, Sep. 28, 1977, Pat. No. 4,131,226.
This application Oct. 10, 1978, Ser. No. 950,138
Int. Cl.³ B65D *25/14;* B23K *31/00;* H01M *2/00, 2/08*
U.S. Cl. 220—453 **1 Claim**



1. A sulfur electrode container construction for containing sulfur to be heated in liquid form for use as a portion of a sodium-sulfur cell, said sulfur electrode container construction comprising an outer rigid container of a material readily corroded by liquid sulfur, one end of said container construction being open for receiving a plug of material therethrough of a type containing sulfur to be melted therefrom, an end cap at the other end of said container construction said end cap having a sulfur supporting portion, a discrete liner nesting within said outer container and of a material substantially non-corrodible by liquid sulfur, intermediate wall means for supporting said liner in substantially contiguous relation with respect to the inner wall of said outer container and serving to seal said inner wall from said liquid sulfur, a gas tight seal defined between said end cap and said outer container, and an anti-corrosion barrier carried at the sulfur supporting surface of said end cap, said intermediate wall means for supporting said liner comprising iron sulfides carried on said inner wall and sulfides

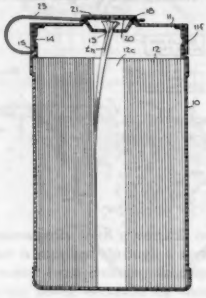
of the liner material carried on the radially outer wall surface of said liner, said sulfides being mutually engaged to close the space between said inner and said radially outer wall surfaces and to hold said liner to said inner wall surface.

4,219,129

MOIST TISSUE DISPENSER

Henry D. Sedgwick, 23 Leonard St., New York, N.Y. 10013

Filed Apr. 5, 1979, Ser. No. 27,360
Int. Cl.[2] B65H *1/00*
U.S. Cl. 221—63 **7 Claims**



1. A moist tissue dispenser comprising:
(A) an open-mouthed cylindrical container;
(B) a roll disposed in the container, said roll being formed by a web of absorbent sheet material divided by equi-spaced transverse lines of perforation into interconnected tissues, said web being impregnated with a liquid agent and being coiled into a roll having a hollow core; and
(C) a removable cover receivable over the mouth of the container, said cover having at its center a frusto-conical discharge orifice through which the leading end tissue drawn from the core of the roll is funnelled, said orifice forming a converging passage providing a constriction which forces the end tissue passing therethrough to rope and effectively plug the orifice to maintain the container in a sealed state, the orifice constriction and its configuration being such as to impose a drag on the roped end tissue as it is pulled from the dispenser by a user which is insufficient to cause severance of the leading end tissue at its line of perforation until this line is advanced beyond the orifice and the exposed tissue is then subjected to a snap action causing separation of the end tissue from the web, the tail of the succeeding tissue now protruding above the orifice to permit its subsequent extraction.

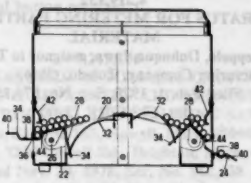
4,219,130

DISPENSING UNIT FOR ELONGATED ARTICLES

Gregory J. Wenkman, Madison, and Edwin A. Filipowicz, Greenfield, both of Wis., assignors to Traex Corporation, Madison, Wis.

Filed Jan. 2, 1979, Ser. No. 165
Int. Cl.[3] B65H *3/34*
U.S. Cl. 221—202 **7 Claims**

1. A dispensing unit for a plurality of elongated articles having a fixed cross-sectional diameter comprising:
a rectangular storage bin for receiving the articles therein having at least one dispensing port formed therein;
a bottom bracket installed in the storage bin so as to bias the articles to roll toward the dispensing port;
a dispensing member mounted in the storage bin adjacent the dispensing port therein so as to be pivotable between a rest and a dispensing position;
a support shelf on the dispensing member for supporting the articles thereon;
a carrying portion of the dispensing member recessed downward from the support shelf and extending out of the dispensing port;
a pinch bar on the dispensing member extending from the support shelf and spaced over the carrying portion;
a storing tab mounted on the interior of the storage bin above the dispensing port and located so that the distance between the sorting tab and the pinch bar in its rest position is greater than the diameter of the articles and less than two such diameters;



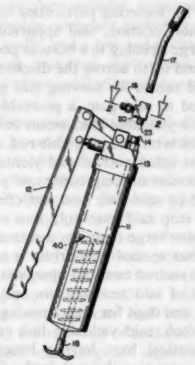
a pair of spring arms formed on the dispensing member; and
a pair of leaf springs each attached to a one of the springs arms and positioned under the bottom bracket so as to both resiliently bias the dispensing member toward its rest position and jostle the articles resting on the bottom bracket so that the articles will tend to roll toward the dispensing member.

4,219,131

GREASE GUN WITH PRESSURE RELEASE ASSEMBLY

Roger Funderburgh, 1840 Park Rd., Woodstock, Ohio 43084

Filed Mar. 12, 1979, Ser. No. 19,632
Int. Cl.[2] F16N *3/12*
U.S. Cl. 222—1 **4 Claims**



1. A method for releasing air pressure within a grease gun which air pressure retards dispensing of grease from said gun, said grease gun being a portable, manual grease gun of the type having a case for retaining grease, a dispensing head fitted onto one end of said case and having a grease outlet, a lever-operated piston pump disposed within said head, a detachable dispensing extension attached to said grease outlet, and means for feeding grease in said case to said piston pump, said piston pump operative to pump grease fed to it through said grease outlet in said extension for dispensing grease from said gun, comprising:
interposing between said grease outlet and said extension a manually-operated air pressure release assembly, said assembly being interposed in close proximity to said pump for releasing air pressure from said pump which air pressure can form in said pump when said case and said exten-

sion contain grease and said gun is in operation, said air pressure retarding dispensing of grease from said gun, said lever and said assembly being concurrently operable, and said lever and said assembly being arranged so that said lever cannot actuate said assembly; and

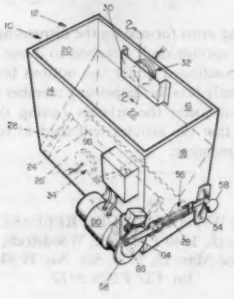
actuating said air pressure release assembly concurrently with said lever for releasing therethrough said air pressure to the atmosphere when said air pressure is in said pump and is retarding dispensing of grease from said gun.

4,219,132

APPARATUS FOR METERING PARTICULATE MATERIAL

Lyle W. Scheppele, Dubuque, Iowa, assignor to Toledo Stamping & Manufacturing Company, Toledo, Ohio

Filed Feb. 1, 1978, Ser. No. 874,136
Int. Cl.[2] G01F *13/00*
U.S. Cl. 222—16 **5 Claims**



1. Apparatus for metering particulate material and transferring it to another location, said apparatus comprising a bin having a discharge opening in a bottom portion thereof, a gate movable back and forth across the discharge opening to open and close it, and means for moving said gate comprising link means connected to said gate, a pivotable rod connected to said link means, a yieldable link, means connecting one end of said yieldable link with said pivotable rod, a first cam pivotally connected to the other end of said yieldable link, means for rotating said first cam to reciprocate said yieldable link, a limit switch operated by said first cam and effective to cause said drive means to stop said gate only in a closed position with respect to said discharge opening, a second cam located near said first cam but spaced therefrom, a second limit switch operated by said second cam and open and closed once during each revolution of said second cam, and a counting device which is pulsed one digit for each opening and closing of said second limit switch, said yieldable link comprising a pair of substantially identical bars having longitudinally-extending slots, a fastener extending through both of said slots with said bars being in contiguous relationship, two substantially identical brackets, one of said brackets being affixed to each of said bars and having outwardly-extending tabs, springs connecting said bars for urging said bars toward one another, each of said brackets having a flange in contact with the other bar when said gate is moved normally across said discharge opening.

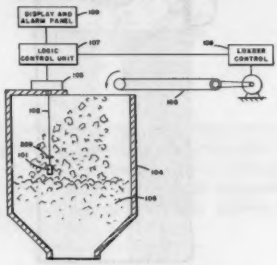
4,219,133

STORAGE LEVEL MONITOR

John J. Sinsky, Milwaukee, Wis., assignor to Intermountain Research and Development Corporation, Green River, Wyo.

Filed Sep. 5, 1978, Ser. No. 939,523
Int. Cl.[2] G01F *23/04*
U.S. Cl. 222—39 **7 Claims**

1. A device for monitoring the level of ore in a storage mass upon the upper surface of which ore delivered by a conveyor falls in the form of hard, heavy fragments up to a foot or more in transverse dimension, said device comprising a weight having a mass at least substantially comparable to that of the larger ore fragments, said weight being suspended from a point above the maximum permitted ore level by a line of sufficient strength to withstand the battering of said falling ore and to lift said weight free from ore under which it becomes moderately buried in a monitoring cycle, operating means for periodically releasing said line so as to permit said weight to descend from a datum point above said maximum permitted ore level to the surface of said storage mass and for retracting said line, as soon as the weight reaches said surface, until the weight has been returned to said datum point, measuring means for measuring the distance traveled by said weight each time in its descent



from the datum point to the storage mass surface, said measuring means comprising a pulser which generates an electrical pulse for each unit distance the weight descends from its datum point until it reaches the surface of the stored ore mass and a counter which counts said pulses and displays a number correlated to the level in distance units of the stored ore mass, and detection and control means for detecting the point at which said descending weight has reached said storage mass surface and for initiating said retraction, said detection and control means comrising a timer having a timer period set for slightly longer than the time interval between said pulses when the weight is freely falling in its descent and means for detecting when the interval between said pulses exceeds said time period, indicating that the weight has reduced its rate of descent by coming to rest on the stored ore mass.

4,219,134

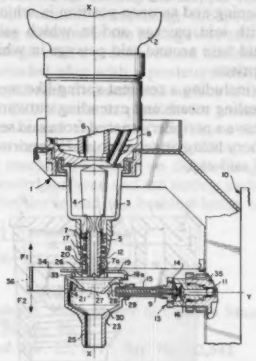
METERING-DISTRIBUTORS FOR BOTTLED THICK LIQUIDS FOR THE PREPARATION OF BEVERAGES

Alfredo Wiesner, Via Oldoardo Beccari, 23, Roma, Italy (00100)

Filed Dec. 5, 1977, Ser. No. 857,444
Int. Cl.[2] B67D *5/56*
U.S. Cl. 222—129.3 **5 Claims**

1. In metering-distributors having a mixture of syrup and chilled water, multiple apparatus for the preparation of beverages, each comprising a member to support a bottle in overturned position, wherein said support member includes a vertical conduit putting in communication said bottle and a metering-cup mounted below said conduit, a main valve slidably mounted inside said metering-cup and co-operating with a first return spring, having a lower limit position in which said valve puts the bottle in communication with said metering cup and closes the entrance to a syrup delivery conduit which is made integral with said main valve, while at a second upper limit position attained in contrast with the bias of said spring said valve closes the communication between the bottle and the metering-cup and opens the communication between said metering cup and the syrup delivery conduit, and which simultaneously opens at least partially a pipe flexibly connected with a source of chilled water with the interposition of a second valve, which includes means permitting said second valve to open at the same time as a metered quantity of syrup is delivered in order to form a water-syrup mixture the improvements

consisting of a disassemblable removable device attached under the said syrup delivery conduit and so shaped as to form two vertically superposed communicating chambers the upper one forming a separation area and the lower one having a funnel-like cover for the syrup inlet, acting as mixing chamber,



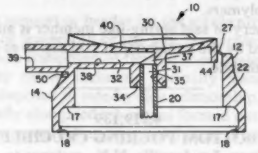
which extends downwardly with a vertical outflow conduit, and to which water is supplied through a screened orifice, in order to prevent water from entering the superposed, upper chamber, said device being actuated by means enabling to selectively supply into the mixing chamber syrup and water or water only.

4,219,135

FOAM SPOUT

Roger K. Ufferfilge, Cary, Ill., assignor to Seaquist Valve Company, Cary, Ill.

Filed Dec. 6, 1976, Ser. No. 747,917
Int. Cl.[2] B65D *83/14*
U.S. Cl. 222—402.13 **4 Claims**



1. An integral article for use with a container having a container valve for actuating flow of product from the container upon movement of the container valve, comprising in combination:

a support member having a bottom region engageable with the container;

said support member comprising an upwardly extending support wall;

said upwardly extending support wall having a slot extending therethrough;

a button member having a conduit including a first conduit portion and a second conduit portion;

said first conduit portion being cooperable with the container valve for actuating flow and receiving product from the container;

said second conduit portion communicating with said first conduit portion and forming a nozzle for the product;

said second conduit portion extending through said slot in said upwardly extending support wall;

flexible wall means enabling pivotal movement of said button member relative to said support member about said second conduit portion whereby depression of said button member causes movement of the container valve to actuate flow of product through said conduit to be discharged through said nozzle;

said flexible wall means comprising a substantially wall extending upwardly within and from the bottom of said slot to contact said second conduit portion of said button member; and

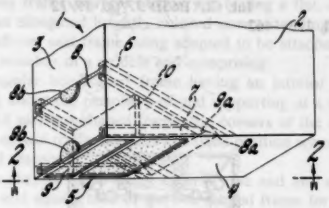
said flexible wall means being integral with said support member and said second conduit portion and having a reduced wall thickness relative to adjacent areas of said support member thereby requiring reduced pressure for pivoting said button member.

4,219,136

PRE-MEASURED AUTOMATIC QUANTITY DISPENSING APPARATUS AND METHODS OF CONSTRUCTING AND UTILIZING SAME

Earl V. Williams, 3110 M-155, Howell, Mich. 48843, and Diane L. Ostrowski, 7230 Cowell Rd., Brighton, Mich. 48116

Filed Nov. 20, 1978, Ser. No. 962,138
Int. Cl.[2] G01F *11/28*
U.S. Cl. 222—450 **8 Claims**



1. An apparatus for measuring and dispensing a predetermined quantity of particulate material, comprising:

a box-shaped disposable container including opposing pairs of side and end walls, and a top and bottom wall;

said container being provided with a discharge opening disposed in said bottom wall adjacent one end wall of said container; and

a measuring and dispensing assembly including:

a first rigid plate insert disposed in the lower inner portion of said container above said discharge opening so as to define a chamber within said container, said chamber being disposed above said discharge opening when said container is in an upright position;

a first pair of track members adapted to slidably receive said first insert, said first track members being each respectively obliquely secured to the inner surfaces of said opposing pair of side walls of said container and extending between said one end wall and a central portion of said bottom wall of said container;

a second rigid plate insert disposed adjacent said discharge opening for selectively covering and uncovering said opening;

a second pair of track members adapted to slidably receive said second insert, said second track members being each respectively secured to the inner surfaces of said opposing pair of side walls substantially adjacent said bottom wall of said container and extending between said one end wall and a central portion of said bottom wall of said container;

said first insert being disposed substantially exteriorly of said container in a first position thereof wherein said chamber is substantially open to permit a portion of the contents of said container to enter and fill said chamber, and substantially interiorly of said container in a second position thereof wherein said chamber is substantially sealed from the contents of said container;

said second insert being disposed substantially interiorly

of said container in a first position thereof wherein said second insert substantially covers and seals said discharge opening, and substantially exteriorly of said container in a second position thereof wherein said discharge opening is substantially uncovered;

said chamber being dimensioned so as to receive a predetermined measured quantity of particulate material;

said chamber being substantially wedge-shaped and defined between said first insert in said second position thereof, said second insert in said first position thereof, said one end wall of said container, and opposing side wall portions of said container;

a tab member disposed on one end of said first insert so as to extend outside said one end wall of said container; and

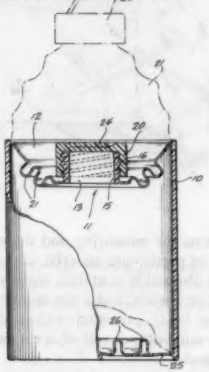
a tab member disposed on one end of said second insert so as to extend outside said one end wall of said container.

4,219,137

EXTENDABLE SPOUT FOR A CONTAINER

Morris L. Hutchens, 16960 Ridgeview Dr., Brookfield, Wis. 53005

Filed Jan. 17, 1979, Ser. No. 4,157
Int. Cl.[2] B65D *37/00, 39/12*
U.S. Cl. 222—462 **5 Claims**



1. An extendable spout forming the entire top of a container having a body portion which contains the contents of the container; a neck opening into the container; and a sheet joined to the top of said body at its periphery and to said neck to seal the neck to said body; a plurality of annular convolutions formed in said sheet concentric with said neck so that said convolutions may be compressed to retract said sheet and said neck forming the entire top of the container into said body, and said convolutions may be expanded to permit extending of said sheet and said neck out of said body to form a funnel attached to said body that serves as a spout which facilitates pouring the contents out of said container.

4,219,138

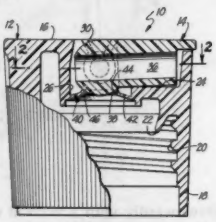
DISPENSING CLOSURE UTILIZING A SEALING ELEMENT SUPPORTED BY A WASHER SPRING

Robert E. Hazard, Kingstown, R.I., assignor to Polytop Corporation, Slatersville, R.I.

Filed Oct. 16, 1978, Ser. No. 951,564
Int. Cl.[2] B67B *7/12*
U.S. Cl. 222—534 **6 Claims**

1. A dispensing closure having a cap provided with an opening leading through said cap between the interior and the exterior of said cap, sealing means for forming a seal with a spout located on the exterior of said cap around and adjacent to said opening and mounting means for holding a spout so that it can be moved relative to said cap, said dispensing closure also having a spout provided with a base and a passage extending through said spout from said base, said spout being held by said mounting means so as to be movable from a closed position in which said sealing means engages said base so as to seal off said opening and an open position in which said opening is aligned with said passage and in which said sealing means engages said base around said passage in which the improvement comprises:

said cap including a resilient spring-like member supporting said sealing means and extending outwardly therefrom so as to have a periphery spaced from said sealing means, said periphery being attached to and supported by the remainder of said cap,



said spring-like member holding said sealing means resiliently against said base of said spout at all times during the movement of said spout between said open and closed positions and when said spout is in said positions,

said sealing means comprises a surface located on said spring-like member which is held by said spring-like member so as to resiliently engage said base on said spout,

said cap, said spring-like member and said sealing means are integral with one another and are formed of a polymer material selected from the group of polymers consisting of injection moldable polyolefin polymers and polymers having the physical properties of injection moldable polyolefin polymers,

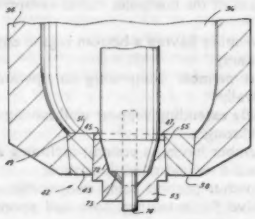
said periphery of said spring-like member is attached to and supported by the remainder of said cap so as to be substantially immobile.

4,219,139

BOTTOM POURING CRUCIBLE

James R. Quinan, Loudonville, N.Y., assignor to Albany International Corp., Menands, N.Y.

Filed Nov. 1, 1978, Ser. No. 956,509
Int. Cl.[2] B22D *41/10*
U.S. Cl. 222—590 **21 Claims**



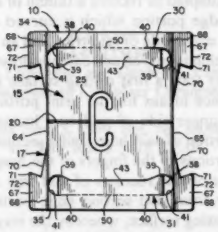
1. In a device for metering and transferring liquid metals including a supporting structure, a hollow sleeve on the supporting structure and open at both ends, a pouring spout on one end and having a passageway therethrough communicating with the hollow interior of the sleeve, a stopper rod extend-

ing into the hollow sleeve from the other end thereof to be shiftable between a position seating on the pouring spout and sealing the passageway therethrough and a position removed from the pouring spout to permit liquid metal to flow into and out of the sleeve, means for shifting the stopper rod between positions, the improvement comprising; the pouring spout including a bushing mounted in the passageway and having an opening therethrough with a predetermined machined surface thereon and a threaded plug with a predetermined machined surface interengaged with the machined surface of the bushing and having an orifice therein to provide for communication between the interior and exterior of the sleeve through the pouring spout, the sleeve being formed of a difficult to machine material and the machined surfaces on the bushing and plug being mating threaded surfaces, and the mating surfaces of the passageway in the sleeve and the bushing being bonded together.

4,219,140
DISPLAY HOLDER

Ely Simonoff, Chicago, Ill., assignor to Opelika Manufacturing Corporation, Chicago, Ill.

Filed Apr. 23, 1979, Ser. No. 32,542
Int. Cl.[3] A47J *51/08*
U.S. Cl. 223—87 **4 Claims**



1. A display support or header for the textile product such as a hand-towel or washcloth or the like, comprising:

a. body means composed of flexible sheet material,

b. said body means including normally planar side wall sections disposed in side-by-side relationship,

c. horizontally elongated tab means formed out of and adjacent the corresponding lower end edge of each side wall section,

d. each of said tab means including vertically enlarged portions at opposite ends thereof,

e. each of said tab means having horizontally extending upper and lower edges and adapted to fold outwardly of the plane of the corresponding side wall section so as to permit a textile product or the like to pass through the cutout portion left by the outwardly folded tab means from one side of said body means to the other side thereof,

f. hanger means on said body means above said tab means for hanging said header,

g. said header when hung from said hanger means adapted to support a textile product in folded relationship at a fold therein,

h. said vertically enlarged portions of said tab means defining upwardly extending teeth adapted to be disposed under and in engagement with said product at said fold,

i. each of said side wall sections including side edges intersecting corresponding lower end edges, and

j. side flap means formed on the side edge of each of said side wall sections adjacent a corresponding intersection and adapted to fold between said side wall sections to a position under said product,

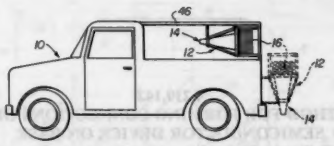
k. each of said side flap means comprising a horizontally extending flap connected to the corresponding side wall section along a vertical score line,

l. said flaps having upwardly extending teeth which engage said product at said fold.

4,219,141
SUPPORTING FRAME FOR TRAFFIC CONES ON VEHICLES

Robert L. Lovy, 13509 Ann Louise, Houston, Tex. 77038

Filed Jul. 12, 1978, Ser. No. 923,783
Int. Cl.[2] B60R *7/00*
U.S. Cl. 224—273 **10 Claims**



1. A supporting frame for use on motor vehicles for supporting highway traffic markers of the type having a flat, square base and an elongated brightly colored cone extending vertically therefrom, said frame being adapted to be attached to a structural member of a vehicle and comprising

a rectangular box-shaped frame having an interior shape fitting about the periphery of and supporting at a square base of said box-shaped frame, the corners of the square bases of said traffic markers in a fixed position when positioned therein,

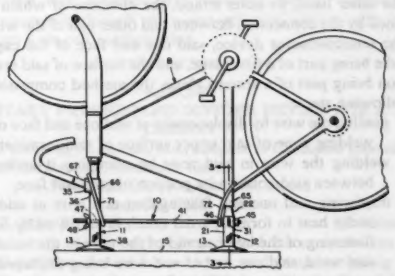
said box-shaped frame being open at one end and spaced from said square base of the box-shaped frame for insertion and removal of said traffic markers and said box-shaped frame having two open sides between said square base and said one open end to facilitate removal of said traffic markers, and

supporting means secured on the square base of said frame opposite said one open end thereof and extending outwardly therefrom to receive and support the cone portions of said highway traffic markers.

4,219,142
BICYCLE RACK FOR AUTOS

Roger Macpherson, 185 Pleasant Way, Penfield, N.Y. 14526

Filed Apr. 27, 1979, Ser. No. 33,813
Int. Cl.[3] B60R *9/04, 9/08;* A47F *7/00*
U.S. Cl. 224—324 **10 Claims**



1. An automobile bicycle rack for supporting at least one inverted bicycle with its seat removed from its tubular seat post, comprising

a pair of bicycle support members having upper and lower ends, respectively,

means for releasably securing the lower ends of said members in spaced relation on an exterior surface of an auto-

motive vehicle with the upper ends of said members projecting outwardly from said surface in spaced relation;

one of said members having in its upper end a socket for receiving and supporting the goose neck portion of an inverted bicycle, and

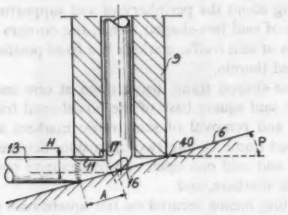
the other of said members having on its upper end a cylindrical projection disposed to extend into the bore in the seat post of said inverted bicycle to assist in supporting the bicycle in an inverted position over said surface, when the goose neck portion of the bicycle is seated in said socket.

4,219,143

METHOD FOR FORMING CONNECTIONS OF A SEMICONDUCTOR DEVICE ON BASE

Gilbert Gailland, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Dec. 19, 1978, Ser. No. 971,092
Claims priority, application France, Dec. 20, 1977, 77 38394
Int. Cl.³ H01L *21/60*
U.S. Cl. 228—159 **5 Claims**



1. A method for forming connections for a semiconductor device mounted on a base, each of these connections being established by a wire of which one end is connected to the device whilst its other end is to be welded to a termination forming part of an electrically conductive connection element integral with the base, the termination having an upper surface including a welding zone, the wire being previously introduced into a tool in the form of an open capillary tube from which it emerges at one end face of the tube to form, on the one hand, an inner strand accommodated in the tube and, on the other hand, an outer strand, the direction of which is defined by the connection between said other end of the wire and the semiconductor device, said one end face of the capillary tube being part of a first plane, and the surface of said termination being part of a second plane, the method comprising the following steps:

guiding the wire by displacement of said one end face on said welding zone of said upper surface of said termination;

welding the wire in said zone by clamping it under heat between said zone and a portion of said end face;

displacing said one end face against said wire at said zone under heat to form a partial notch in said wire by limited flattening of the inner strand of the wire in the vicinity of said weld, said one end of said wire being displaced until another portion of said end face and said upper surface of said termination come into contact to limit the extent of said flattening such that said first and second planes form a predetermined angle greater than 0° and less than 60°, the edge defining the intersection of said planes being situated on the common region of said contact; and

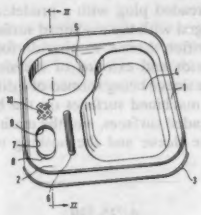
cutting the wire by application of a tractive force to said inner strand.

4,219,144

SERVING TRAY

Gabriella Hagelberg, Stockholm, Sweden, assignor to Bengt Petersson New Products Investment AB, Askim, Sweden

Filed Nov. 8, 1978, Ser. No. 958,619
Int. Cl.³ B65D *1/36*
U.S. Cl. 229—2.5 R **2 Claims**



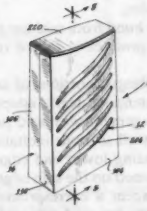
1. A tray for serving a meal, said tray having a plurality of recesses forming bowls for receiving at least one dish and at least one drink in a drinking vessel, and a peripheral boarder extending upwards from said tray and reversely bent downwardly to the level of said tray, an elongated hole extending through said tray adjacent one border portion of the tray of a size and shape adapted to receive a thumb of a hand, said hole having a first edge portion which is curved and extends upwards from the upper side of said tray, and an opposite second edge portion which is curved and extends downwards from the underside of said tray, a first resting surface including thumb positioning surface means for the print portion of the thumb formed on the upper side of said tray located adjacent said second edge portion of said hole, and a second resting surface for the print portions of the fingers of the hand formed on the underside of one of said recesses of said tray and located at a greater distance from said second edge portion of said hole than said first resting surface, whereby the tray can be gripped and carried by the hand with the thumb extending through said hole without bearing against any sharp edge and with its print portion on said first resting surface and the print portions of the fingers being against said second resting surface and supporting same.

4,219,145

CARTON WITH ADJUSTABLE AIR PASSAGES

Harold R. Jaeschke, Milwaukee; Thomas R. Patmore, Elm Grove, both of Wis., and George Webinger, Minneapolis, Minn., assignors to Champion International Corporation, Stamford, Conn.

Filed Mar. 29, 1979, Ser. No. 25,012
Int. Cl.² A61L *9/04*; B65D *5/36*
U.S. Cl. 229—8 **7 Claims**



1. A carton having a plurality of adjustable air passages comprising:

(a) a first tapered sleeve forming an outer carton unit, said

first sleeve being closed at its bottom end and having a plurality of spaced openings therein; and

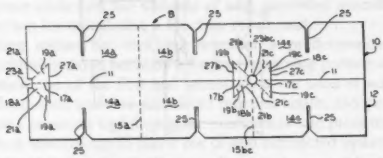
(b) a second tapered sleeve forming an inner carton unit, said second sleeve being nested within said first sleeve and being slidable relative to said first sleeve along a vertical axis between a first position and a second position, said second sleeve being closed at its top end opposite said bottom closed end of said first sleeve and having a plurality of spaced openings therein arranged complimentarily to said spaced openings in said outer carton unit to align with the openings therein when said inner carton unit is in said first position, and to align with the spaces between said openings in said outer carton unit when said inner carton unit is in said second position, said first and second sleeves having rectangular cross-sections perpendicular to said vertical axis, and with the bottom end of the carton being larger than the upper end thereof, said closed top end of said second sleeve being formed by an opposite pair of flaps, each secured to the top of two opposed side walls by curved fold lines such that said closed end of said second sleeve is slightly bowed outwardly for improving the inherent frictional engagement between said relatively slidable first and second sleeve members thereby maintaining the positioning of said relatively slidable sleeve members at the desired degree of opening of said complimentary openings.

4,219,146

PARTITION

Boyd T. Skaggs, Louisville, and Doyle W. Patton, Crestwood, both of Ky., assignors to Container Corporation of America, Chicago, Ill.

Filed Nov. 5, 1979, Ser. No. 90,901
Int. Cl.[3] B65D *5/48, 25/04*
U.S. Cl. 229—15 **2 Claims**



1. An internal partition structure formed from a pair of similar partition sections disposed in interlocking engagement with each other to provide a plurality of cells within an outer container or wrapper, comprising:

(a) a pair of similar partition sections, each being formed from a unitary blank of foldable paperboard or the like;

(b) each of said partition sections including a pair of similar, elongated panels separated throughout the majority of their lengths but joined to each other in at least two places;

(c) each of said panels being divided into at least two panel sections by at least one fold line extending transversely thereof;

(d) adjacent panel sections of each panel being folded at angles to each other and each being disposed parallel to a panel section of the other panel;

(e) each of the panel sections being foldably joined to a panel section of the other panel;

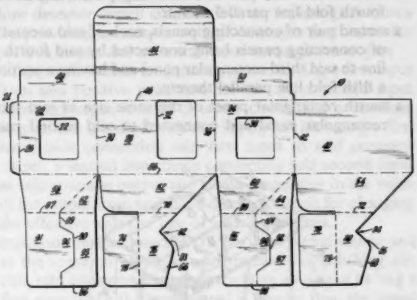
(f) said panel sections having slots extending inwardly from corresponding edges thereof for at least half the width thereof to permit the panels of each section to be joined with corresponding panels of a similar but inverted panel section to accommodate interlocking engagement therebetween.

4,219,147

SIX CELL GLASSWARE CARTON

Karl A. Kohler, Roselle, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Apr. 23, 1979, Ser. No. 32,728
Int. Cl.[2] B65D *5/48*
U.S. Cl. 229—27 **13 Claims**



1. A collapsible six-cell carton comprising:

opposed side walls and opposed end walls hingedly interconnected at their side edges to form a tubular structure;

two first bottom panels, respectively hingedly connected to the bottom edges of said side walls;

two second bottom panels, respectively hingedly connected to the bottom edges of said end walls, said first and second bottom panels being interengaged to form a bottom for said carton;

two first dividers each of L-shaped configuration respectively hingedly connected to said first bottom panels and disposed perpendicular thereto; and

two second dividers each of L-shaped congiruation respectively hingedly connected to said second bottom panels and disposed perpendicular thereto, said first and second dividers being of substantially the same height as said carton walls, each of said second dividers including a central cut line defining a tab means, said tab means being spaced from the top and bottom edges of said second dividers, one said tab means for fixedly connecting one said second divider to the adjacent said first divider to form a first cross-like divider member, the other said tab means for connecting the other said second divider to the other said first divider to form a second cross-like divider member, with one portion of each cross-like divider member being disposed in overlapping relation to create a central wall whereby said cross-like divider members cooperate with each other and with said carton walls to form a six-cell configuration.

4,219,148

UNITARY PAPERBOARD DIVIDER DEVICE FOR A CARTON

Ivan E. Garmon, St. Joseph, Mo., assignor to Champion International Corporation, Stamford, Conn.

Filed Mar. 28, 1979, Ser. No. 24,613
Int. Cl.[2] B65D *5/48*
U.S. Cl. 229—28 R **12 Claims**

2. A unitary one-piece paperboard blank for erection into a six cell partition device for a carton, said blank including a plurality of rectangular panels which are articulated and lie along a common axis, said blank including:

a first rectangular panel having a free outer edge and an opposite and parallel first fold line;

a second rectangular panel connected to said first rectangular panel by said first fold line and having an opposite second fold line parallel thereto;

a first partition panel having a fold line internal to said sec-

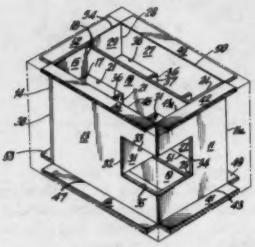
ond panel and having free edges formed within said first and second panels;

a first pair of connecting panels, each panel of said first pair being connected by a portion of said second fold line to said second rectangular panel and having a portion of a third fold line parallel thereto;

a third rectangular panel connected by said third fold line to each of said first pair of connecting panels and having a fourth fold line parallel thereto;

a second pair of connecting panels, each of said second pair of connecting panels being connected by said fourth fold line to said third rectangular panel and having a portion of a fifth fold line parallel thereto;

a fourth rectangular panel of the same size as said second rectangular panel and connected to said second pair of



connecting panels by said fifth fold line and having a sixth fold line parallel thereto;

a fifth rectangular panel of the same size as said first rectangular panel connected to said fourth rectangular panel by said sixth fold line and having a free edge parallel thereto;

a second partition panel having a fold line internal to said fourth panel and having free edges formed with said fourth and fifth panels and adapted to fit within the said cut-outs in said third;

said third rectangular panel having two cut-out openings each sufficiently large to receive a respective partition panel; and

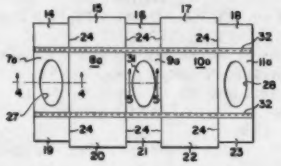
flap panels to form protective air cells, a pair of said flap panels being connected along fold lines to each of said first, fourth and fifth rectangular panels along opposite edges of those said rectangular panels.

4,219,149

CONTAINER CONSTRUCTION

Martin H. Stark, Saginaw, Mich., assignor to Arrow Paper Products Company, Saginaw, Mich.

Filed Jul. 24, 1978, Ser. No. 927,466
Int. Cl.³ B65D 5/02
U.S. Cl. 229—37 R **10 Claims**



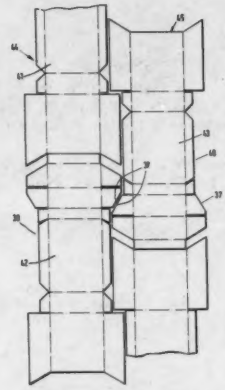
7. A container construction comprising first and second blanks of material each of which is scored transversely thereof to form five panels joined to one another along adjacent sides, alternate ones of said panels being of substantially uniform area, means securing said blanks to one another in overlying relation, one of said blanks having flaps extending from opposite edges of each of its panels, each of said flaps being creased at its juncture with the associated panel and each of said flaps being separated from its adjacent flap by a slit, whereby said panels and flaps may be folded inwardly relatively to one another to form a hollow body with the other of said blanks being at the inside of said body, the endmost panels of said first and second blanks being in overlying relation and forming a wall of four thicknesses of said material and said flaps at corresponding ends of said one of said blanks overlying one another and forming a wall of four thicknesses of said material when said panels and flaps are folded to form said body, each of said endmost panels having an opening therein in register with one another to provide access through said wall to the interior of said body.

4,219,150

ARRANGEMENT OF BLANKS FOR HINGED LID BOXES

Heinz Focke, and Kurt Liedtke, both of Verden, Fed. Rep. of Germany, assignors to Focke & Pfuhl, Verden, Fed. Rep. of Germany

Division of Ser. No. 834,945, Sep. 30, 1977, Pat. No. 4,121,756.
This application Aug. 9, 1978, Ser. No. 932,165
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1976, 2642708; Dec. 15, 1976, 2656702
Int. Cl.³ B65D 5/66
U.S. Cl. 229—44 CB **2 Claims**



1. An arrangement of generally longitudinal blanks from which hinged lid boxes for cigarettes or the like are folded, such blanks being defined on an elongated web of packaging material such as cardboard or the like, characterized by:

(a) each individual blank comprising successive portions for a front wall (**10**), bottom (**11**), rear wall (**12**), lid rear wall (**13**), lid ceiling wall (**14**), and lid front wall (**15**), each having side flaps for forming side walls (**19**, **20**) and lid side walls (**21**, **22**),

(b) said side flaps associated with said front wall (**23**, **24**), said lid ceiling wall (**33**, **34**), and said lid front wall (**35**, **36**) being formed with dimensions corresponding to the dimensions of said side walls (**19**, **20**) and said lid side walls (**21**, **22**), so as to form first, second, and third wider portions, respectively,

(c) said side flaps associated with said bottom (**27**, **28**), said rear wall (**29**, **30**), and said lid rear wall (**31**, **32**) being formed with dimensions substantially smaller than that of said side walls (**19**, **20**) and said lid side walls (**21**, **22**), so as to form a recessed portion,

(d) said blanks being arranged such that said second and third wider portions of a first blank (**42**) and said first wider portion of a second blank (**41**) project into said recessed portion of a third blank (**43**),

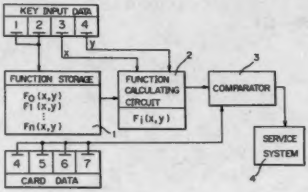
(e) at least said second wider portion of the first blank (**42**) and the adjacent second wider portion of the third blank

(43) being provided with oblique edges (37) which run adjacent to one another.

4,219,151
CARD VERIFICATION SYSTEM USING STORED FUNCTIONS

Takanobu Haruki, Takatsuki, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Mar. 27, 1979, Ser. No. 24,422
Claims priority, application Japan, Apr. 26, 1978, 53/50649
Int. Cl.[2] G06F *15/30*; G06K *5/00*
U.S. Cl. 235—379 **7 Claims**



1. A verification system for determining authorized use of a connected system, said verification system comprising:

reading means for reading first data from a card;

manually operable input means for entering second data into said verification system, said second data being different from said first data;

function storage means for storing a plurality of different functions, each having at least one variable, said function storage means being responsive to an address code formed from a portion of at least one of the read first data and the entered second data for looking up and generating a specific function;

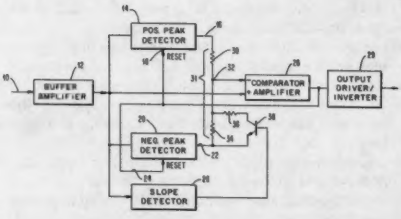
calculating means for substituting a remaining portion of at least one of the first and second data not used in said address code into the variable of said generated specific function for calculating a function result; and

checking means for checking whether a predetermined relationship exists between a further remaining portion of at least one of the first and second data not used in said address code and said calculated function result, and providing an access signal upon the existence of said predetermined relationship to allow use of said connected system.

4,219,152
DUAL THRESHOLD COMPARATOR CIRCUIT

William D. Couch, and Richard G. Minor, both of Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 21, 1979, Ser. No. 13,572
Int. Cl.[2] G06K *7/14*; H03K *9/02*; G11B *5/09*
U.S. Cl. 235—463 **11 Claims**



1. For detecting transitions of an input signal between first and second states by comparison of the input signal to first and second adaptively derived threshold voltages, a circuit comprising:

positive and negative peak detector circuits connected to the input signal source, said peak detector circuits providing output signals equal to the positive and negative peak voltages, respectively, of the input signal during two successive cycles, each of said peak detector circuits including a reset input;

a slope detector circuit connected to the input signal source for providing an output voltage having a first value for positive slopes and a second value for negative slopes;

an adaptive threshold-establishing circuit having a first input from said positive peak detector circuit, a second input from said negative peak detector circuit and a common output, said threshold-establishing circuit including a first impedance connecting said first input to said common output, a second impedance connecting said second input to said common output and means responsive to the value of the output from said slope detector circuit for changing the effective value of one of said impedances;

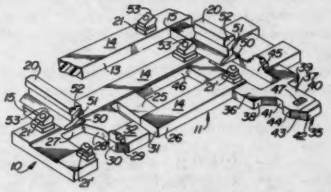
comparator means connected to the input signal source and to the common output of said threshold-establishing circuit, said comparator means providing an output having a first state when the input signal is greater than the signal on the common output and a second state when the input signal is less than the signal on the common output; and

means for applying the output of said comparator means to the reset inputs of said peak detector circuits to reset each peak detector whenever the comparator output changes to a state corresponding to the output of the peak detector to be reset.

4,219,153
MODEL VEHICLE TRACK SECTION

Richard C. M. Cheng, Suite 1604, Austin Center, Austin Ave., Kowloon, Hong Kong

Filed Dec. 13, 1978, Ser. No. 969,106
Int. Cl.[2] A63H *19/30*
U.S. Cl. 238—10 E **7 Claims**

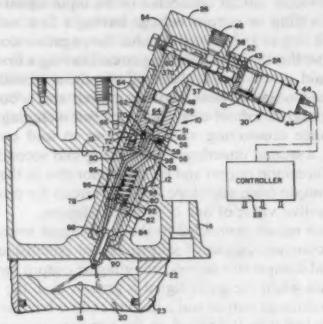


1. A model vehicle track section comprising an elongate generally flat nonconductive bed, a pair of conductive rails superposed longitudinally on said bed, attachment means attaching said rails to said bed spaced from the ends of said bed, a longitudinal end extension on each end of said bed, the end extensions at opposite bed ends being laterally offset on opposite sides of a bed longitudinal center line, a longitudinally inwardly extending receiver at each bed end offset laterally oppositely to the adjacent end extension, said end extensions and receivers being configured for entry into and reception of end receivers and extensions of like track beds, resilient detent means on each adjacent pair of end extensions and receivers for snap interfitting end engagement between like track beds, and conductive open-ended sleeve-like rail connectors on one end of each rail for electrical connection to rails of a like track section, said connectors each overlying a respective end extension laterally inwardly thereof and terminating short of the underlying end extension to protect persons from said connectors, said rails being generally longitudinally co-extensive and terminating generally longitudinally midway between the entering end of the adjacent end extension and the entering end of an end extension of an interengaging like track bed.

4,219,154
ELECTRONICALLY CONTROLLED, SOLENOID OPERATED FUEL INJECTION SYSTEM

Douglas A. Luscomb, Mt. Upton, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jul. 10, 1978, Ser. No. 923,137
Int. Cl.[2] F02M 47/02
U.S. Cl. 239—91 16 Claims

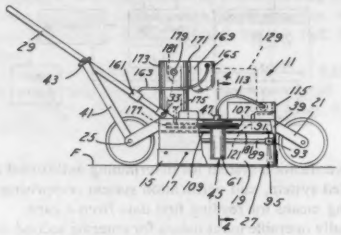


1. A fuel injection system comprising, in combination,
(a) a housing,
(b) a multi-way valve located within said housing having an inlet passage (32) and a plurality of outlet passages (34, 36) formed therein,
(c) a reservoir (39) for storing fuel, said reservoir communicating with one of said outlet passages,
(d) pump means for withdrawing fuel from said reservoir and introducing same, at supply pressure, to said inlet passage of said multi-way valve,
(e) a shuttle chamber (37) located within said housng communicating with one of said outlet passages of said multi-way valve,
(f) electromagnetic means (42, 44, 108) disposed adjacent to said multi-way valve for selectively permitting communication between said inlet passage and said shuttle chamber or between said shuttle chamber and said one outlet passage,
(g) an electronic controller (25) for energizing said electromagnetic means to regulate the operation of said multi-way valve,
(h) an actuating chamber (49) and a metering chamber (50) defined within said housing,
(i) an intensifier piston (62) comprising an upper cylindrical member and a lower cylindrical member, said upper cylindrical member (64) being moveable within said actuating chamber as said lower cylindrical member (66) is moveable within said metering chamber,
(j) first conduit means (48) fed by said pump means for delivering fuel at supply pressure to said actuating chamber to drive said intensifier piston in a first direction during the actuation phase of the cycle of operation of said system,
(k) a nozzle (78) disposed downstream of said metering chamber and in communication therewith,
(l) spring means (94) and fuel at supply pressure normally biasing said nozzle closed,
(m) shuttle means (38) moveable within said shuttle chamber in response to a change of state of said electromagnetic means whereby said intensifier piston is driven in a first direction to amplify the pressure of the fuel in said metering chamber (50) to a level sufficient to overcome the bias of said spring means and the fuel at supply pressure to open said nozzle to discharge fuel therethrough,
(n) second conduit means (142) extending between said actuating chamber and said reservoir to allow fuel to return thereto, and
(o) variable orifice means (144, 144a, 146) situated in said second conduit means for adjusting the extent of displacement of said intensifier piston during the time that a signal from said controller energizes said electromagnetic means.

4,219,155
HIGH PRESSURE WATER CLEANING DEVICE FOR FLOORS, GRATINGS, AND PAINT LADEN HANDLING DEVICES

William G. Goerss, Fenton, Mich., assignor to NLB Corporation, Wixom, Mich.

Filed Aug. 21, 1978, Ser. No. 934,756
Int. Cl.[2] B05B 3/00
U.S. Cl. 239—124 24 Claims



1. A cleaning device for discharging cleaning fluid under high pressure towards a surface comprising a hollow spray enclosure having top and side walls and an open bottom; said top wall having inner and outer surfaces;
a rotating seal including an upright spindle within said enclosure secured to and projecting above said top wall;
said spindle having an axial bore with a high pressure fluid inlet at the top thereof;
said bore extending for a portion of the length of said spindle and terminating in a plurality of radial discharge ports;
said seal including a rotatable tubular body sealingly journalled and supported upon and enclosing said spindle;
said body having an internal annular high pressure fluid chamber communicating with said discharge ports, and a plurality of radial outlets communicating with said chamber;
laterally disposed tubular nozzle arms at their inner ends projected into said outlets and secured to said body for rotation therewith within said enclosure;
a nozzle adjustably mounted upon an end portion of each arm for delivering streams of high pressure fluid within said enclosure and downwardly in a predetermined pattern upon the surface;
rotative power means on said top wall connected to said body;
said power means including a motor located opposite the outer surface of said top wall and having an axial drive shaft projected through said top wall into said enclosure;
means connecting said shaft to said body;
said spindle including a radial flange bearing against the inner surface of said top wall and secured thereto;
said body including a pair of bushing seals mounted within and upon said body, said bushing seals being located above and below said body fluid chamber and said discharge ports;
precision ball bearings mounted within said body adjacent opposite ends thereof in registry with said spindle;
means supporting and retaining said body against endwise movement relative to said spindle including a pair of stop shoulders upon said spindle, engaging said bearings and a pair of stop shoulders within said body supporting said bearings;
a bearing cover within the lower end of said body support-

ively engaging the adjacent ball bearing, and sealed with respect to said spindle and body;

fastening means for holding said cover in said body; and

a series of annular seals within said body interposed between said body and spindle upon the top and bottom of one ball bearing and upon the top of the other ball bearing respectively for excluding fluid from said bearings.

4,219,156

TILTABLE THRUST NOZZLE

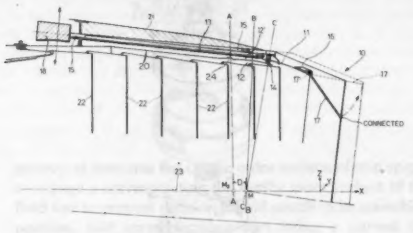
Hans Schwaerzler, Taufkirchen, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschrankter Haftung, Munich, Fed. Rep. of Germany

Filed Apr. 21, 1978, Ser. No. 898,824

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1977, 2719439

Int. Cl.² B64C *15/06, 15/12*

U.S. Cl. 239—265.35 **5 Claims**



1. An apparatus for adjusting the direction of the thrust vector at the exit end of a thrust nozzle comprising a thrust nozzle body (**20**) having a longitudinal central axis (**23**), a nozzle body end member (**12**) operatively secured to said nozzle body (**20**) in a plane (A—A) extending radially relative to said central axis, said nozzle body end member (**12**) having an outer surface (**12'**) of a given configuration, adjustable ring means (**11**), slide means (**14**) riding on said outer surface configuration (**12'**) of said nozzle body end member (**12**), means securing said slide means to said adjustable ring means whereby the latter is slidable relative to said nozzle body end member, operating means (**13**) supported on said nozzle body (**20**) and operatively connected to said adjustable ring means (**11**), said nozzle body end member (**12**) having a center of curvature (M_2) located on said longitudinal central axis (**23**) where said plane (A—A) intersects said longitudinal axis (**23**), said adjustable ring means (**11**) being rotatable for adjustment about a rotational center (M) which is also located on said longitudinal central axis (**23**) and spaced downstream at a distance (D) from the center of curvature (M_2) of said nozzle body end member (**12**), said slide means (**14**) being arranged for taking up forces in directions extending substantially perpendicularly to said longitudinal central axis (**23**).

4,219,157

HYDROSTATIC PAINT ATOMIZATION SPRAY-GUN

Michel Binoche, Paris, France, assignor to S.K.M., Stains, France

Filed Mar. 8, 1978, Ser. No. 884,487

Claims priority, application France, Mar. 10, 1977, 77 07064; Jul. 22, 1977, 77 22592

Int. Cl.² B05B *1/04, 7/08*

U.S. Cl. 239—296 **2 Claims**

1. A hydrostatic-atomization paint spray-gun of the type having an elongated nozzle outlet for hydrostatically discharging a flat jet of paint and means for producing two jets of compressed air which jets are deflected to completely surround the jet of paint, there being further provided means for producing at least two further jets of compressed air lying in the same plane as the jet of paint and converging towards said paint jet said means for producing the further jets of compressed air comprising two pairs of outlets, each pair being disposed symmetrically on either side of the plane of the paint jet so as to produce a pair of air jets converging to form a respective one of the further air jets wherein the outlets disposed on either side of the plane of the paint jet are each

arranged to produce an air jet in a plane parallel to the axis of said paint jet so as to form with the plane of said paint jet an angle of substantially 45 degrees, and are inclined forwardly by an angle of substantially 30 degrees, to a plane parallel to the axis of said paint jet, and means for adjusting the amount of compressed air supplied to form said further jets.

4,219,158

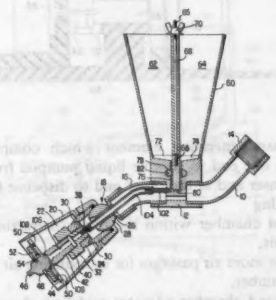
LIQUID MIXING DEVICE FOR A SHOWER HEAD

Carl B. Lacy, 3727 Pinevale Rd. SW., Roanoke, Va. 24018

Filed Jun. 15, 1979, Ser. No. 48,723

Int. Cl.² B05B *3/04*

U.S. Cl. 239—305 **8 Claims**



1. In combination with a shower head selectively supplied with water, under pressure, conducted by a pipe system from a source of supply, a device for mixing liquid with the water as it issues from the downstream side of the shower head, such device including:

a. a container for holding a supply of the liquid and said container is supported in an upright position at a location upstream of, and above, the level of the shower head;

b. a valve system disposed between an exit end of said container and an entrance end of a liquid conducting means, which means terminates at an exit end at the downstream side of the shower head, said valve system being manually operable by a shower user to control the delivery and rate of delivery of liquid, flowing under the influence of gravity, from said container to said exit end;

c. a mixer disc rotatably mounted downstream of, and adjacent to, a plate member which is adjustably carried within the shower head with said plate member having a peripheral wall surface lying adjacent to an inner wall of said shower head and permitting water to flow therebetween,

said disc having one wall surface with a plurality of radially extending grooves facing one wall of said plate member, said grooves opening radially toward the axis of rotation of said disc, into a chamber in said disc and at their opposite ends towards said inner wall of the shower head, said chamber being in facing relationship with the exit end of said liquid conducting means, a portion of such means extending through said plate member;

d. means defining a plurality of openings extending through said plate member, said openings having downstream exit ends facing said grooves in said disc near the periphery thereof, whereby a portion of the water flow through the shower head is directed through said openings to issue as jets against the grooved surface to cause said disc to rotate, the rotary movement of said disc being effective to sling liquid, being received in said chamber of said disc, radially outwardly through said grooves into the water flowing between the inner wall of the shower head and said peripheral wall surface of said plate member.

4,219,159

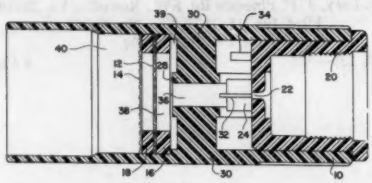
FOAM DEVICE

Walter H. Wesner, Plantation, Fla., assignor to The AFA Corporation, Miami Lakes, Fla.

Continuation-in-part of Ser. No. 819,428, Jul. 27, 1977, abandoned. This application Jan. 5, 1979, Ser. No. 1,046

Int. Cl.³ B05B *7/30*

U.S. Cl. 239—343 **30 Claims**



1. A foam-generating element which comprises a body adapted at one end to receive liquid pumped from a trigger-type dispenser and at the other end to dispense foamed product, including

(a) a first chamber within the body for mixing said liquid with air,

(b) one or more air passages for introducing air into said first air chamber,

(c) a second chamber adjacent said first chamber, through which the aerated liquid passes, the second chamber being of substantially the same diameter as said first chamber and being provided with means for mixing the foam,

(d) a third chamber adjacent to and of larger diameter than said second chamber and which receives aerated product from said second chamber,

(e) screening means covering the downstream end of said third chamber, through which the product of the third chamber is forced, and

(f) outlet means for dispensing the foamed product.

4,219,160

FLUID SPRAY NOZZLE HAVING LEAK RESISTANT SEALING MEANS

Roy H. Allred, Jr., Pleasant Garden, N.C., assignor to General Electric Company, New York, N.Y.

Filed Jan. 6, 1978, Ser. No. 867,435

Int. Cl.² B05B *1/08*

U.S. Cl. 239—447 **6 Claims**

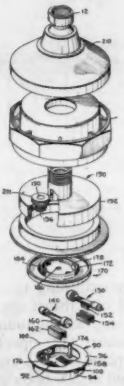
1. A fluid spray nozzle comprising:

a hollow housing having a fluid inlet, a first group of fluid spray discharge outlets, and a second group of fluid spray discharge outlets;

means in said housing defining an inlet plenum communicating with said fluid inlet, a first pair of inlet ports communicating with said inlet plenum, a second pair of inlet ports communicating with said inlet plenum, first passage means extending from said first pair of inlet ports to said first group of discharge openings, and second passage means extending from said second pair of inlet ports to said second group of discharge openings;

means within said second passage means responsive to fluid flowing through said second passage means to cyclically interrupt such fluid and cause a pulsating fluid spray to be discharged from said second group of discharge openings whenever fluid flows through said second passage means;

a first one of said first pair of ports and a first one of said second pair of ports aligned on a first axis in spaced-apart facing relationship, and a second one of said first pair of



ports and a second one of said second pair of ports aligned on a second axis in spaced-apart facing relationship;

a first valve assembly mounted for reciprocating movement on said first axis between the respective ports, said first valve assembly being movable between a first end position blocking said first one of said first pair of ports and a second end position blocking said first one of said second pair of ports;

a second valve assembly mounted for reciprocating movement on said second axis between the respective ports, said second valve assembly being movable between a first end position blocking said second one of said first pair of ports and a second end position blocking said second one of said second pair of ports;

and control means coupled to said first and second valve assemblies for adjustably positioning said valve assemblies and thereby selectively dividing fluid flowing from said inlet between said first and second groups of outlet openings.

4,219,161

QUICK DISCONNECT SPRAY NOZZLE

Manfred F. A. Freissle, Johannesburg, South Africa, assignor to Screenex Wire Weaving Manufacturers (Prop.) Limited, Alberton, South Africa

Filed Feb. 28, 1978, Ser. No. 882,065

Claims priority, application South Africa, Mar. 8, 1977, 77/1362

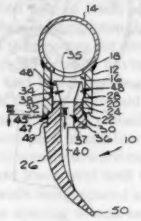
Int. Cl.² B05B *1/26*

U.S. Cl. 239—523 **1 Claim**

1. A spray nozzle, readily removable from and replaceable in a fluid pressure line for use primarily in ore washing operations where the wash water is recirculated through the nozzles and

there is a high incidence of partial or complete nozzle blockage due to ore particles too large to pass through the nozzle comprising:

integral spigot and spray forming parts of resilient plastic material, said spigot being circular and having an annular groove in its outer surface to sealingly engage a slightly larger annular shoulder on the inner surface of the fluid pressure line, said spigot having a fluid passage therethrough, the end of said passage upstream of said groove converging in the direction of fluid flow and the outer surface of said upstream end diverging in the direction of fluid flow to define a tapered gap with the interior surface of the fluid line, said spigot having at least one axially extending slot through the portion upstream of said



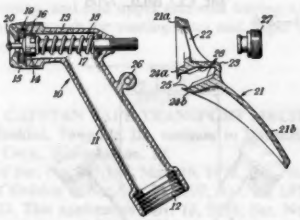
groove, at least one flat on the outer surface of said spigot to engage a corresponding flat on the inner surface of the fluid line to prevent rotation of said nozzle in its assembled position, said spray forming part being a curved fan shaped member positioned in the path of fluid discharged from said passageway and having a pair of ridges diverging outwardly from said passageway to contain the fluid therebetween and means defining a pair of straight parallel grooves on the outer surface of said spigot part spaced equally outwardly of said annular groove to lie beyond the end of the fluid line in the assembled position of the nozzle, whereby a bifurcated tool may be inserted in said grooves to engage the end of the fluid line for prying the nozzle out of the line.

4,219,162

SPRAY NOZZLES FOR SPRAYING LIQUIDS

Roland Dadson, Thame, England, assignor to Hozelock Limited, Aylesbury, England

Filed May 9, 1978, Ser. No. 904,298
Int. Cl.[2] B05B *1/32*
U.S. Cl. 239—583 **4 Claims**



1. A pistol grip spray nozzle for spraying a liquid and comprising

a nozzle body,

a valve within the nozzle body for controlling the flow of liquid issuing from the nozzle body,

a valve stem extending from the valve to the exterior of the nozzle body,

a handle connected to the valve stem for moving the valve stem to operate the valve,

a male formation and a female formation which fit together with a snap action, one formation being on the body and the other formation being on the handle to provide a pivotal mounting of the handle on the body,

the male formation comprising a part cylindrical knuckle serving as a journal and the female formation being defined by part cylindrical inner surfaces of two spaced jaws serving as a bearing which possess sufficient resilience to be forced apart when the knuckle is pressed into the bearing, the jaws springing back to embrace the knuckle with said snap action,

the part of the handle to one side of the pivotable mounting being connected to the part of the handle to the other side of the pivotable mounting by a resiliently flexible knee, one jaw being formed integrally with said one side of the handle and to one side of said knee, and the other jaw being formed integrally with the other side of the handle and to the other side of said knee,

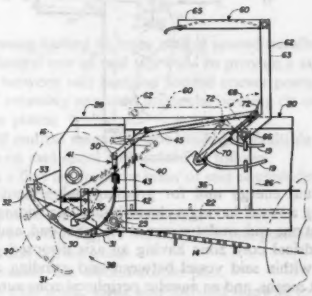
whereby the handle can be moved by manual grip around the handle and nozzle body to operate the valve, the pivoting of the handle forcing the male formation and the female formation into engagement with one another.

4,219,163

CLOSING MECHANISM FOR A FINE MATERIAL PAN ON A MANURE SPREADER

John K. Hale, Waterloo, Belgium, and William F. Ostergren, Terre Hill, Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Feb. 22, 1979, Ser. No. 13,949
Int. Cl.[3] A01C *15/16*
U.S. Cl. 239—662 **22 Claims**



1. In a manure spreader having a mobile frame adapted for movement across a field; an open ended spreader box mounted on said frame, said spreader box having a floor, a front endwall, two laterally spaced sidewalls and an open rear discharge area; a material conveying means for transporting material rearwardly within said spreader box towards said rear discharge area; a widespread material discharge means mounted on said frame adjacent said rear discharge area for the widespread discharge and distribution of material from said spreader box; a fine material pan extending transversely between said sidewalls adjacent said floor within said rear discharge area, said fine material pan having an elongate pivot end transverse between said sidewalls and a remote substantially parallel latch end, said fine material pan having a pivotal axis hingedly securing said fine material pan upon said frame along said pivot end, said fine material pan further having a latch means at said latch end for releasably securing said fine material pan to said spreader box; a fluid endgate extending transversely between said sidewalls above said floor for retaining semi-liquid material within said spreader box, said fluid

endgate having a body portion and first and second arms, each said arm having a pivot means for pivotally securing said fluid endgate upon said frame, said fluid endgate being selectively movable from a closed position to an open position, wherein said body portion is elevated above said spreader box; and drive means connected to said widespread material discharge means said material conveying means and said fluid endgate for providing movement thereof, the improvement including a closing device for said fine material pan comprising:

at least one elongate member interconnecting said fine material pan and said fluid endgate, said at least one elongate member having a first end and a remote second end, said first end being affixed to said fine material pan at a point other than along said pivotal axis, whereby a moment about said pivotal axis can be created, said second end being attached to said fluid endgate such that upon movement between said closed position and said open position, the distance between said first end and said second end varies; and

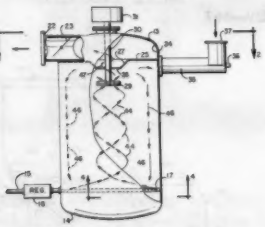
a takeup means for compensating for the differences in length required of said at least one elongate member when said fluid endgate moves between said closed position and said open position.

4,219,164

COMMINUTION OF PULVERULENT MATERIAL BY FLUID ENERGY

David W. Taylor, Edgemont, Pa., assignor to Microfuels, Inc., Bala Cynwyd, Pa.

Filed Mar. 16, 1979, Ser. No. 21,061
Int. Cl.³ B02C *19/06*
U.S. Cl. 241—5 **26 Claims**



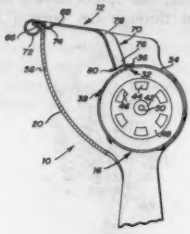
1. A fluid energy mill for grinding pulverulent material comprising a vessel having a closed bottom providing a grinding zone at one end, outlet means at the other end, and a generally cylindrical core zone having an axis disposed generally centrally within said vessel between said grinding zone and said outlet means, and an annular peripheral zone surrounding said generally cylindrical core zone, a plurality of circumferentially-spaced ejector nozzles for injecting fluid carrier medium into said grinding zone in a direction between a radius to said central zone axis and a direction perpendicular to said radius, all of said nozzles being disposed in said grinding zone to inject a primary flow of fluid carrier medium into said vessel through said grinding zone, said nozzles cooperating with said closed bottom and said outlet means so as to generate an axially-flowing vortex within said central zone, said vessel having transverse wall means at the other end spaced from said grinding zone to intercept the axially-flowing vortex and deflect at least a first portion of the medium therein outwardly into the peripheral zone, the fluid medium being deflected into said peripheral zone flowing oppositely as a secondary flow and being introduced into said primary flow issuing from said nozzles to thereby effect a recirculation of the fluid carrier medium within said vessel, and feed means to introduce pulverulent material into said circulating flow of fluid carrier medium, so that the material is introduced into said primary flow for fluid energy grinding thereof, said outlet means at the remote end of said vortex operable to withdraw a second portion of said fluid medium and with it a fraction of the pulverulent material which has been reduced in mass below a predetermined limit in said grinding zone.

4,219,165

ATTACHMENT FOR FOOD CUTTERS

Norman A. Bergan, Dallas, Tex.; Robert G. Walker, Augusta, Ga., and Marvin Van Weelden, Plano, Tex., assignors to Saladmaster, Inc., Dallas, Tex.

Filed Oct. 10, 1978, Ser. No. 950,087
Int. Cl.² A47J *43/25*
U.S. Cl. 241—93 **4 Claims**



1. In an apparatus for cutting food having a rotating cutting cone with cutting edges defined on the surface therof, a hopper having a back wall and two side walls substantially perpendicular thereto, the hopper disposed adjacent the cone for feeding food to the cutting edges thereof, an attachment removably mounted to the hopper for positioning food approximately normally the cutting edges of the cone comprising:

a supporting surface for being supported by the back wall and side walls of the hopper;

the supporting surface having a ridge formed on the inside face thereof capable of abutting against the back wall of the hopper to prevent movement of the attachment relative to the hopper; and

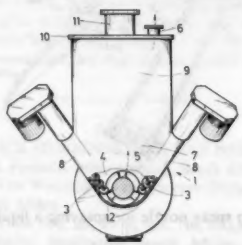
a bearing surface oriented at an angle to the supporting surface and extending into the hopper just short of the cone.

4,219,166

DISK DEFIBRATOR

Jorma Surakka; Martti Pokkinen; Jorma Makkonen; Erkki Valkama; Viljo Kärkkäinen; Pekka Räbinä, and Jouni Matula, all of Savonlinna, Finland, assignors to Enso-Gutzeit Osakeyhtio, Helsinki, Finland

Filed Jun. 22, 1978, Ser. No. 918,093
Int. Cl.² B02C *7/06*
U.S. Cl. 241—246 **1 Claim**



1. Improvement in a disk defibrator comprising a first housing, grinding disks located within said first housing forming a throat therebetween, said grinding disks rotating around a horizontally extending axis, said first housing including an

upwardly extending wall extending transversely of the axis of rotation of said grinding disks and having an opening therethrough for receiving material to be defibrated, feed apertures in one of said disks for passing the material from the opening in said wall of said first housing into the throat, feed means for conveying material to and through the opening in said wall of said first housing, wherein the improvement comprises that said feed means comprises an upwardly extending second housing having a lower end wall, an upper end wall, a first pair of upwardly extending oppositely arranged walls disposed transversely of the axis of said grinding disks and extending between said lower and upper end walls and a second pair of upwardly extending oppositely arranged walls disposed transversely of said first pair and extending between said first pair of walls and between said lower and upper end walls, the lower end of one of said first pair of walls adjacent said lower end wall having an opening therethrough aligned with and in communication with the opening for receiving materials in said first housing, said second housing having a lower part extending upwardly from said lower end wall for a portion of the height of said second housing from said lower end wall to said upper end wall and an upper part extending upwardly from the upper end of said lower part, in said lower part said second pair of walls converging inwardly toward one another in the downward direction to said lower end wall with the lower ends of said second pair of walls being spaced apart and located on the opposite sides of the opening in said second housing into said first housing, each of said second pair of walls in said lower part of said second housing having a depression formed therein, a feed screw located in each said depression with said feed screws converging in the downward direction and with the lower ends of said feed screws being located at the opposite sides of the opening from said second housing into the opening in said first housing, said lower part of said second housing between said feed screws and said first pair of walls defining an open space for the flow of steam from the throat in said grinding disks in said first housing through the opening in said housing and the opening in said second housing into the open space in the lower part of said second housing with the steam in communication with said feed screws so that the steam can flow upwardly through the lower part between said feed screws and in counterflow relation to the material to be defibrated into the upward part of said second housing without encountering the material being conveyed downwardly by said feed screws, said one of said first pair of walls having the opening therethrough extending upwardly from said first housing approximately perpendicularly to the axis of rotation of said grinding disks, the other of said first pair walls being disposed in diverging relation to said one of said first pair of walls so that the continuation of the open space within said second housing from said lower part upwardly through said upper part increases in cross sectional area, said first and second pairs of walls forming a funnel-shaped space within said second housing, and said upper end wall having a steam vent formed therethrough for venting from said upper part of said second housing.

4,219,167

DUAL CAPSTAN TAPE TRANSPORT MECHANISM

John P. Jenkins, Towanda, Ill., assignor to International Tapetronics Corp., Bloomington, Ill.

Division of Ser. No. 887,184, Mar. 16, 1978, Pat. No. 4,153,918, which is a division of Ser. No. 791,707, Apr. 28, 1977, Pat. No. 4,096,533. This application Nov. 13, 1978, Ser. No. 959,485

Int. Cl.³ G11B *23/06*

U.S. Cl. 242—55.19 A **2 Claims**

1. A magnetic tape cartridge for use in a dual capstan tape transport mechanism comprising:

a rectangular housing having four sidewalls and top and bottom cover plates;

a forward one of said sidewalls being on the forward side of said housing when inserted into play position in said tape transport mechanism;

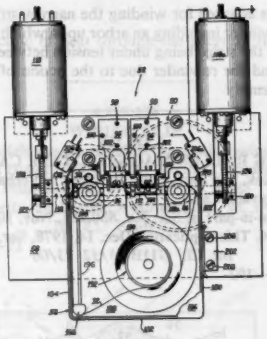
said forward sidewall having at least one head means opening intermediate the ends thereof to receive head means mounted on said tape transport mechanism;

said forward sidewall having two capstan openings at the ends thereof to receive capstans mounted on said tape transport mechanism;

said bottom cover plate having two pressure roller openings adjacent said capstan openings to receive pressure rollers insertable therein by said tape transport mechanism;

said bottom cover plate having a tape guide opening between said pressure roller openings to receive a tape guide insertable therein adjacent the head means by the tape transport mechanism;

first, second and third corner posts spaced inwardly from sidewalls at corners of the housing, said first corner post being located in one rear corner of the housing, said second and third corner posts being located respectively forwardly of and diagonally across from said first corner post;



said housing having an inner wall in spaced parallel relation to a lateral one of said sidewalls to provide a tape guideway between said first and second corner posts;

a spool rotatably mounted inside the housing on one of said cover plates;

a roll of endless magnetic tape wound in multiple convolutions on said spool and trained as follows:

(a) in a first leg from the inner of said convolutions to said first corner post,

(b) around said first corner post,

(c) in a second leg, forwardly along said guideway to said second corner post,

(d) around said second corner post,

(e) in a third leg, along said forward sidewall to said third corner post,

(f) around said third corner post,

(g) in a fourth leg, returning to the outer of said convolutions on said spool.

4,219,168

SLITTING AND REWINDING ASSEMBLY

Roger J. Lofstrom, Batavia, Ill., assignor to H. J. Ruesch Machine Co., Springfield, Ill.

Filed Mar. 26, 1979, Ser. No. 24,091

Int. Cl.³ B65H *35/02*

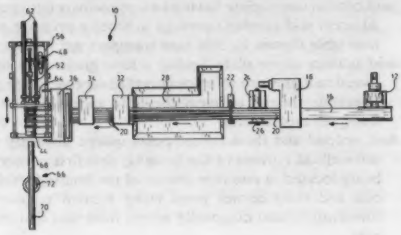
U.S. Cl. 242—56.2 **24 Claims**

1. An assembly for providing rolls of relatively narrow strips from a relatively wide stock material, comprising:

a slitter adapted for cutting relatively wide material into relatively narrow strips;

a tension stand adapted for receiving the narrow strips from the slitter, said tension stand including a pressure pad assembly which applies uniform pressure to the strips as they pass therethrough such that the strips are not subject to tension between the slitter and the tension stand, said

pressure pad assembly comprising at least one air actuated rubber boot and a surface opposite said boot, the boot and surface adapted for receiving narrow strips therebetween and applying uniform pressure to the strips; and



a rewinder adapted for winding the narrow strips into rolls, said rewinder including an arbor upon which the strips are wound, the strips being under tension between the tension stand and the rewinder due to the action of the pressure pad assembly.

4,219,169

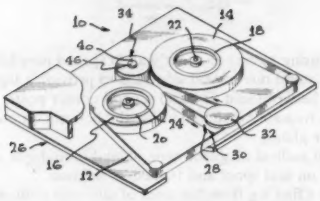
FLOATING ROLLER MAGNETIC TAPE CARTRIDGE

Stepan Majicek, San Jose, Calif., assignor to Verbatim Corporation, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 850,254, Nov. 10, 1977, Pat. No. 4,146,194. This application Dec. 14, 1978, Ser. No. 969,183

Int. Cl.³ G11B *15/32, 23/08*

U.S. Cl. 242—192 **10 Claims**



1. In a floating roller cartridge which includes a drive belt that extends about floating and drive rollers and against the tape rolls that lie about tape reels which are rotatably mounted on a housing, the improvement wherein:

said floating roller has axial bearings projecting at opposite ends thereof which are fixed to said floating roller and rotatable on said housing, with at least one of said axial bearings having a substantially flat end surface.

4,219,170

MISSILE ROLL POSITION PROCESSOR

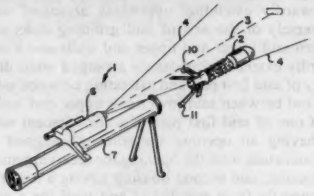
Andrew T. Esker, Florissant, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Jul. 8, 1977, Ser. No. 813,814

Int. Cl.² F14G *7/00;* **A23G** *9/00;* **G01C** *3/08*

U.S. Cl. 244—3.14 **10 Claims**

1. In a missile system including a missile capable of being directed toward a target, means for generating a binary coded beam of electromagnetic wave energy, and means of said missile for positioning said missile at the center of said beam, the improvement which comprises means for electronically establishing a roll angle reference signal for said missile, said roll angle reference signal establishing means including a first optical receiver at the missile facing the beam generating means, a second optical receiver at the missile facing the beam generating means, said first and said second receivers being separated from one another by some predetermined distance, means for determining an electrical signal representation of the sine function of the missile roll position angle, means for determining an electrical signal representation of the cosine function of the missile roll position angle, means for differentiating the sine and cosine functions of missile roll position angle to obtain an electrical signal proportional to missile roll rate, means for squaring the differentiated sine and cosine functions, means for



summing the output of the squaring means, means for determining the square root of the sum of the squared signals, first integrator means operatively connected to the output of the square root obtaining means, and second integrator means operatively connected to the output of the square root obtaining means, the output of said first and said second integrator means being a ramp voltage representing 360 degrees of roll position data separated by 180 degrees.

4,219,171

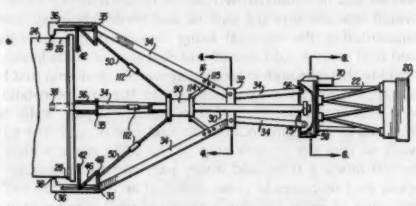
DEVICE FOR COUPLING A FIRST VEHICLE TO A SECOND VEHICLE

Arthur A. Rudmann, Bowie, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 6, 1979, Ser. No. 9,888

Int. Cl.³ B64G *1/64*

U.S. Cl. 244—161 **15 Claims**



1. A device for the coupling of a first vehicle to a second vehicle moving relative thereto, said second vehicle having an annular means adapted to be engaged by said coupling device carried by said first vehicle, said device comprising:

(a) at least three contact members arranged relative to each other for engaging said annular means,

(b) at least three manipulator arms, each manipulator arm operatively connected at one end thereof to one of said contact members, each of said manipulator arms being rotatably mounted adjacent a shaft carried by said first vehicle,

(c) means positioned on said shaft adjacent a second end on each of said manipulator arms for controlling the movement of said second ends to a first position wherein said movement of said second ends to said first position causes said contact members to move toward each other into engagement with said annular means on said second vehicle and wherein said movement of said second ends to a second position causes said contact members to part and to disengage said annular means on said second vehicle,

(d) bumper means mounted adjacent said one ends of said

manipulator arms for engaging said annular means on said second vehicle, and

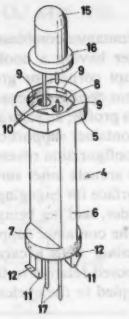
(e) actuator means mounted on said shaft and operatively connected to said bumper means by bumper link means such that upon actuation of said actuator means said bumper means causes said annular means to move into axial alignment with said shaft.

4,219,172

HOLDER FOR ELECTRONIC AND ELECTRICAL PARTS

Hiroo Murayama, Hiroshima, Japan, assignor to Nifco, Inc., Tokyo, Japan

Filed Jun. 26, 1978, Ser. No. 919,092
Int. Cl.² F16M *13/00*
U.S. Cl. 248—27.3 **4 Claims**



1. A one-piece dielectric plastic holder for the secure retention of an electronic or electrical part having integral retention means, said holder comprises a leading portion including resilient snap engaging means forming a recess for acceptance and engagement with the retention means of the part subjected to retention, a base portion including integral resilient fastener means carrying shoulder means adapted for fast engagement with an apertured base panel, a shank portion integrally connected at one end with said leading portion and at the other spaced end with said base portion, and two or more holes extending longitudinally through said shank portion from said leading portion end through said base portion end.

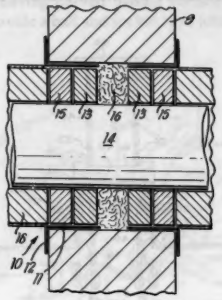
4,219,173

INSULATED PIPE SUPPORTS

George A. Forbes, Kennesaw, Highfield Rd., West Byfleet, Surrey, England

Filed Sep. 29, 1978, Ser. No. 947,154
Claims priority, application United Kingdom, Oct. 5, 1977, 41315/77
Int. Cl.² F16L *11/12, 5/00*
U.S. Cl. 248—56 **14 Claims**

1. A fire-retardant support means for service equipment extending through an aperture in a partitioning member of a building, comprising a pair of annular integrated support units for insertion in respective opposite ends of said aperture around said service equipment, each unit comprising means defining an outer sleeve and integral means, fixedly located within said sleeve, comprising load bearing material for engaging and supporting said service equipment and fire retardant material for engaging around said service equipment to prevent the spread of fire through said aperture, wherein the outer sleeve members of said units are spaced apart in the aperture to



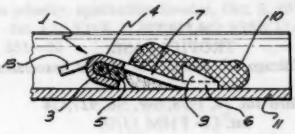
inhibit conduction of heat through the aperture through said outer sleeves.

4,219,174

WIRING CLIP

Martin H. Whitehouse, Northmead, Australia, assignor to Byrne & Davidson Doors (N.S.W.) Pty. Limited, Revesby, Australia

Filed Jan. 23, 1979, Ser. No. 5,685
Claims priority, application Australia, Jan. 26, 1978, PD3151
Int. Cl.² F16B *15/00*
U.S. Cl. 248—71 **4 Claims**



1. A conductor affixing clip comprising a generally flat U-shaped body portion, having at least two legs and a crotch portion therebetween, an open ended trough like appendage on the crotch region for receiving at least one conductor, and detent means on each of the leg portions of the body adapted to engage between a roller curtain and a noise and friction reducing strip affixed to said curtain.

4,219,175

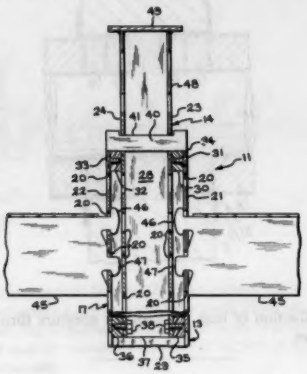
EXTENSIBLE SLOTTED UPRIGHT

Robert G. Harig, Paragould, Ark., assignor to Darling Store Fixtures, Paragould, Ark.

Filed Nov. 20, 1978, Ser. No. 962,240
Int. Cl.² A47G *29/00*; E04G *3/08*
U.S. Cl. 248—125 **8 Claims**

1. An extensible slotted upright for mounting brackets which extend inwardly through slots in said upright, said upright comprising vertically oriented inner and outer tubes in telescopic engagement with each other, said inner tube having a telescoping end external to said outer tube and a retracted end within said outer tube, said tubes each having at least one side and each including a plurality of spaced apart slots along and through said at least one side for interlocking insertion of such brackets, said slotted sides of said tubes having substantially identical thickness, said tubes being oriented with respect to each other such that at least a portion of each slotted side of said outer tube lies adjacent to and in a parallel plane with a like portion of a slotted side of said inner tube, means maintaining a predetermined spacing between said adjacent and parallel

slotted sides throughout the telescoping range of said inner tube in said outer tube with said predetermined spacing at least as great as the distance by which brackets inserted into said



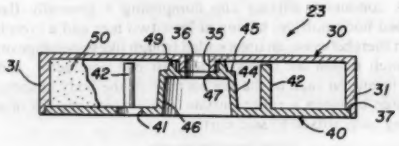
slots extend inwardly beyond said slotted sides, and means for securing said inner and outer tubes in predetermined telescoping positions with respect to each other.

4,219,176

TROPHY BASE

Allen Weiss, Chicago, Ill., assignor to Alamar Associates, Glenview, Ill.

Filed Jul. 24, 1978, Ser. No. 927,474
Int. Cl.² F16M *13/00*
U.S. Cl. 248—188.1 **10 Claims**



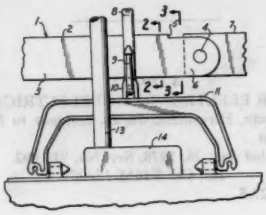
1. A base for a trophy comprising a bottom plate member, a top plate member spaced from said bottom plate member, a side wall between said bottom plate member and said top plate member and around the peripheries thereof, said wall and said plate members defining a shell with a substantially hollow interior, said bottom plate member having a hole therein for admitting into said hollow interior fluid filler material which is thereafter allowed to set, first and second bosses respectively on said top plate member and said bottom plate member and extending toward each other, said bosses respectively having aligned first and second bores extending therethrough for receiving a fastening bolt, the inner ends of said bosses being in contact to minimize the amount of fluid filler material entering said bores during the filling of said shell, and an annular lip on one of said bosses having an internal diameter greater than the exterior diameter of the other of said bosses and a height substantially equal to the height of said other boss, the outer surface of said lip contacting the member carrying said other boss substantially to eliminate fluid filler material from entering said bores during the filling of said shell.

4,219,177

BED RAIL HANGER SYSTEM

David L. O'Day, Canoga Park, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Aug. 25, 1978, Ser. No. 936,875
Int. Cl.² E04G *3/00*
U.S. Cl. 248—215 **6 Claims**



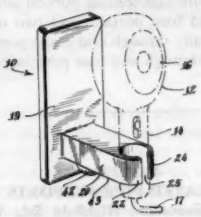
1. A hanger and container combination comprising: a generally S-shaped hanger having a hook with an arcuate inner surface free of abrupt corners or grooves so as to slidingly engage rails of various configurations without substantial conformance to the rail's profile; an enlarged grasping knob on one end of the hook; a container support on an opposite end of the hook with a bight configuration reversed from the hook; a lug protruding from the arcuate inner surface of the hook, which lug has a shoulder surface for engaging a rail and a cam surface leading to this shoulder, said lug being adapted to maintain an angular position of the container support relative to such rail; and a medical container with a carrying handle having an eyelet angularly disposed relative to this handle, and the container support is coupled to the eyelet.

4,219,178

STORAGE OR HOLDER DEVICE FOR ELECTRICAL APPLIANCE

Norbert Assion, Schwaben-Strasse 91, Schonach, Fed. Rep. of Germany (D7036)

Filed Nov. 22, 1978, Ser. No. 962,905
Int. Cl.² A47F *5/00*
U.S. Cl. 248—314 **5 Claims**



1. A storage device for a portable electric hair dryer having a casing provided with a handle and an air discharge orifice, said holder comprising

(a) a support member provided with a gripping portion for receiving therein the handle of said hair dryer and comprising a base and a casing portion extension projecting from said base, a gripping portion arranged at the free end of said extension and having a wall portion conforming in configuration to the handle of said dryer,

(b) detenting means provided in said support member for releasably locking said handle within said gripping portion,

(c) said detenting means including a slide plate mounted for movement within said support member extension and

having a detent arm connected thereto for movement into and out of engagement with said handle in said gripping portion,

(d) said slide plate having spaced marginal portions slidably mounted in guide channels formed in the wall surfaces of said extension, and

(e) means mounted on said support and operable for controlling said movement of said slide plate, and including an actuator mounted externally of said extension and a drive shaft extending from said actuator into driving engagement with said slide plate.

4,219,179

SIGN HOLDER

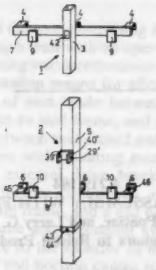
Hermann Silbernagel, Uhlandstrasse 7, 6800 Mannheim 1, Fed. Rep. of Germany

Filed Apr. 27, 1978, Ser. No. 900,516

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1978, 7714523

Int. Cl.² A47F *7/00*

U.S. Cl. 248—488 **14 Claims**



1. A sign holder comprising: an upper and a lower part, the upper and the lower part each comprising at least one square tube and at least one perpendicular crossbar with hooks, said hooks bent downward on the upper part and upward on the lower part, the lower part having the same number of square tubes as the upper part, each of said at least one square tube of the lower part having a greater cross-section than the cross-section of its respective square tube of the upper part, and each of the at least one square tube of the lower part extending beyond its respective at least one crossbar in both directions; and further comprising a plurality of iron plates welded to at least one of said crossbars on each of said upper and lower parts, each of said plurality of plates projecting beyond its respective crossbar in the direction in which the hooks on its respective crossbar is bent.

4,219,180

TYING APPARATUS FOR CONCRETE FORM PANEL

James K. Strickland, Jacksonville, Fla., assignor to Strickland Systems, Inc., Jacksonville, Fla.

Filed Mar. 3, 1978, Ser. No. 883,276

Int. Cl.² E04G *7/18*

U.S. Cl. 249—219 R **15 Claims**

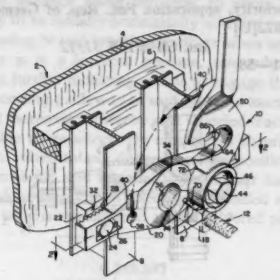
1. Anchoring apparatus for holding a concrete form panel to an elongated tie to restrain outward movement of the panel relative to the tie comprising:

a load bearing member fixedly connectible to the outside of the form panel and having an opening through which a tie is extendable,

a clamping member releasably clampingly engageable with a portion of a tie which is extending outwardly through said opening,

an axially and laterally yieldable pivot connection pivotally securing said clamping member to said load bearing member to permit said clamping member to swing relative to the plane of said bearing member and pivot relative to said bearing member, and

said members having curved mating surface portions contoured to provide a ball and socket type joint between said



members to permit compensative movement of said clamping member relative to said bearing member to accommodate misalignment between the tie and the form panel or misalignment between opposing form panels.

4,219,181

FLUID FLOW GOVERNING VALVE MEANS

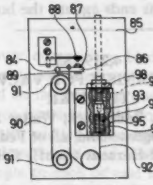
Karl E. Joelson, Box 67, Lenhovda, Sweden (36073)

Filed Sep. 12, 1978, Ser. No. 941,373

Claims priority, application Sweden, Oct. 3, 1977, 7711012

Int. Cl.² F16K *31/363, 31/40*; F15B *13/043*

U.S. Cl. 251—30 **4 Claims**



1. An electric circuit for governing the valve member of a fluid flow governing valve means including a housing enclosing a movable main valve member, a conduit for supplying pressure fluid to move said main valve member, valve means in said conduit and having a valve body for controlling the flow of pressure fluid acting upon said main valve member, said circuit comprising:

(A) an electric resistance wire having heat expansion properties and connected to said control valve body, so its thermal movements will determine the position thereof,

(B) a source for supplying electric current to said resistance wire, at an intensity higher than acceptable thereof during an extended exposure,

(C) potentiometer means for monitoring the supply of current from said source and including a first manually adjustable resistor to indicate the desired input, a second adjustable resistor operable in response to the position of said main valve member and a comparator for evaluating possible differences between the resistance values at said first and second resistors, and

(D) means governed by the thermal movements of said wire for causing an intermittent flow of the current allowed to pass on by said potentiometer means.

4,219,182

LIQUID FLOW CONTROL VALVE

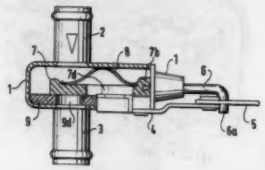
Werner Schneck, Speyer, Fed. Rep. of Germany, assignor to Ranco Incorporated, Ohio

Filed Jul. 20, 1978, Ser. No. 926,445

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1977, 7722822[U]

Int. Cl.[2] F16K *31/12*

U.S. Cl. 251—58 5 Claims



1. A flow control valve for controlling liquid flow in a vehicle heating system, comprising:

(a) a housing having inlet and outlet connections;

(b) a fixed ceramic plate in said housing;

(c) a valve obturator member comprising a ceramic plate slidable in said housing relative to the fixed plate, both said ceramic plates having respective surfaces which cooperate with each other to form a sliding seal, and having respective openings, the degree of overlap of the openings in said plates determining the valve throughflow between the inlet and outlet connections in each position of the valve obturator plate relative to the fixed plate; and,

(d) spring means for urging said valve plates together, said valve obturator plate having a frame-like portion defining a peripheral flange and said spring means comprising a bowed spring strip opposite ends of which engage the peripheral flange of the ceramic obturator plate to press the latter firmly against the fixed plate, said spring being braced between its ends against the housing.

4,219,183

OPERATING MECHANISM FOR VALVES, GATES AND THE LIKE

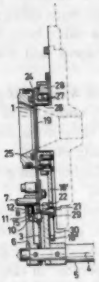
Otto-Horst Hoffmann, Rodenbach; Walter Heil, Neuberg, and Friedrich Stark, Langenselbold, all of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Nov. 3, 1978, Ser. No. 957,583

Claims priority, application Fed. Rep. of Germany, May 11, 1978, 2820531

Int. Cl.[2] F16K *25/00*

U.S. Cl. 251—159 5 Claims



1. An operating mechanism for valves and the like, comprising: a housing with a port situated therein which is to be opened and closed; a seat associated with the port; a valve plate for closing the port; rotatable shaft drive means for the valve plate wherein rotation of the shaft in one direction effects movement of the valve plate from its open position to its closed position followed by a pressing movement of the valve plate against the seat, and wherein rotation of the shaft in the other direction effects movement of the valve plate in the opposite direction, the drive means including intermittent drive means for the transformation of the rotatory movement of the shaft to the desired movement of the valve plate comprising a disk pivotable about a first axis in response to rotation of the shaft and having at least a portion of which is a circular cam, a tumbler pivotable about a second axis and having at least one concave edge engageable with the circular cam and means coupling the closing and opening movement with the movement of the tumbler about the second axis and coupling the pressing movement of the valve plate with the movement of the disk about the first axis; locking means coupled with the disk for locking same against the valve seat comprising a ring surrounding the port and a toggle mechanism associated with the ring; and means defining a groove surrounding the port for constantly guiding the plate and wherein the plate includes an aperture which in the open position of the valve is concentric with the port.

4,219,184

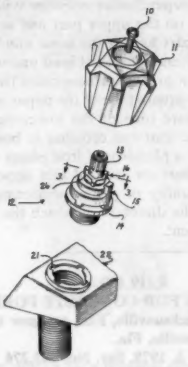
FAUCET VALVE ASSEMBLY WITH FRICTION DRAG

Dennis W. Crawford, Pontiac, and Larry G. Turner, Waterford, both of Mich., assignors to Bristol Products, Inc., Elkhart, Ind.

Filed Dec. 4, 1978, Ser. No. 966,060

Int. Cl.[3] F16K *35/04*

U.S. Cl. 251—297 2 Claims

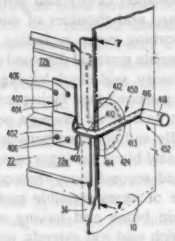


1. A valve assembly including in combination a valve body, a faucet attachment part including a fluid conducting component terminating in a valve seat, said valve body in engagement with said faucet attachment part, a stem guided by said valve body and including a valve part shiftable into and out of contact with said valve seat upon rotation of said stem relative to the valve body, a handle carried by said valve stem, the improvement comprising grip parts extending from said valve body and located betweem said handle and valve body frictionally contacting said stem at spaced locations about the circumference of the stem to prevent independent rotation of the stem when said valve assembly is in use.

4,219,185
ROTATING BLADE FIRE DAMPER

Francis J. McCabe, Doylestown, Pa., assignor to Prefco Products, Inc., Buckingham, Pa.

Continuation of Ser. No. 770,831, Feb. 22, 1977, Pat. No. 4,113,230, which is a continuation-in-part of Ser. No. 689,994, May 26, 1976, Pat. No. 4,081,173. This application May 16, 1978, Ser. No. 906,655
Int. Cl.[2] F24F 13/14; F16K 1/22
U.S. Cl. 251—308 8 Claims

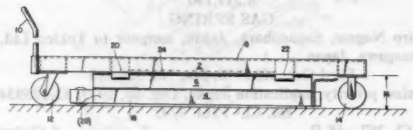


8. In an air control damper comprising a frame disposed in a duct, said duct having a wall with an aperture defined therein, at least one blade having two interconnected portions disposed about an integral, rotation means for allowing selective rotational displacement of said blade between closed and open positions with respect to said frame, and actuating means for moving said blade between said closed and open positions, the improvement wherein said actuating means for moving said blade comprises an external drive bracket attached to said blade, said bracket further comprising an extension portion extending towards said frame, and a rod portion disposed over a portion of said frame and extending away from said blade through said aperture to the exterior of said duct, wherein at least rotation of said rod portion causes rotation of said blade.

4,219,186
LIFT TABLE AND COOPERATING WHEEL TRUCK ASSEMBLY

John Brewer, Scarborough, Me., assignor to Southworth, Inc., Portland, Me.

Filed Jun. 7, 1979, Ser. No. 46,521
Int. Cl.[3] B60P 1/00
U.S. Cl. 254—9 C 3 Claims



1. A lifting combination for handling material which is to be raised to any desired vertical elevation with respect to a ground reference which essentially comprises a vertically extendable lift table assembly and a cooperating wheel truck assembly, for handling said material, that is operable for a selective superposed mating upon said lift table assembly; wherein,

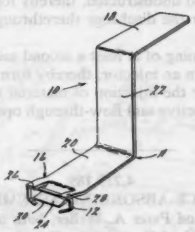
(a) said lift table assembly comprises a horizontally extending working platform which is positioned above, and operable to be vertically extended by, a scissor jack linkwork assembly, said working platform further comprising at least one horizontally extending guideway and said lift table assembly further comprises a sub-carriage support for said scissor-jack linkwork assembly, said sub-carriage including means to allow independent horizontal movement and placement of said lift table upon said ground reference, either prior or during a mating engagement with said wheeled truck assembly; wherein,

(b) said wheeled truck assembly comprises a load platform supported upon wheels which maintain the load platform at underside at a first distance above a ground reference, said first distance being sufficient to allow said truck assembly to be initially horizontally wheeled into a superposed mating to said working platform when said lift table assembly is in a lowered position, said wheeled truck assembly further including means to engage the horizontally extending guideway of said lift table assembly when wheeled thereover; whereby said wheeled truck assembly is operable to be selectively engaged with said working platform, raised to any desired vertical position thereby, and so enabling said material to be further handled, and said truck assembly then selectively wheeled away when said lift table is repositioned at said lowered position.

4,219,187
STAPLE REMOVER

Stanford O. Brumfield, 28437 Nieman Rd., New Boston, Mich. 48164

Filed Feb. 12, 1979, Ser. No. 11,084
Int. Cl.[3] B66F 15/00; B25C 11/00
U.S. Cl. 254—28 1 Claim



1. A staple remover comprising: blade means, lever-arm means, said blade means positioned at one end of said lever-arm means, a handle, and an intermediate portion attached to the other end of said lever-arm means and connecting said handle to said lever-arm means, said lever arm means extending generally parallel to said handle and said intermediate portion extending at a right angle to each of said lever arm means and said handle, said blade means having a wedge-shaped member for removing said staples and a pair of ears, one of said pair of ears being positioned above and on each side of said wedge-shaped member, the upper surface of said wedge-shaped member and the lower surface of each of said ears being non-parallel and continuously converging for holding said staples in a fixed position during their removal and afterwards.

4,219,188
SLIDE VALVE FOR THE INJECTION OF MATERIAL FOR USE IN THE OUTLET OF A METALLURGICAL VESSEL

Ernst Meier, Wolleraru, Switzerland, assignor to Stopinc Aktiengesellschaft, Zug, Switzerland

Filed Aug. 13, 1979, Ser. No. 66,464
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1978, 2836409
Int. Cl.[2] B22D 37/00
U.S. Cl. 266—236 8 Claims

1. A slide valve for the outlet of a metallurgical vessel, said slide valve comprising:

a refractory stationary plate having a flow-through opening and adapted to be fixedly positioned beneath an outlet in a metallurgical vessel;

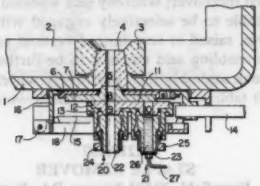
a refractory slide plate mounted beneath said stationary plate for sliding movement with respect thereto between plural positions, said slide plate having plural flow-through openings adapted to align with said flow-through opening of said stationary plate at respective of said plural positions of said slide plate;

a nozzle support member mounted beneath said slide plate and movable therewith;

a plurality of nozzle members having therethrough nozzle openings, said nozzle members being selectively removably mounted on said nozzle support member for movement therewith at positions with each said nozzle opening being aligned with a respective said flow-through opening of said slide plate;

said nozzle opening of at least a first said nozzle member being free and unobstructed, thereby forming outlet nozzle means for the discharge therethrough of liquid melt; and

said nozzle opening of at least a second said nozzle member having therein an injector, thereby forming injector nozzle means for the injection of material therethrough and into the respective said flow-through opening of said slide plate.

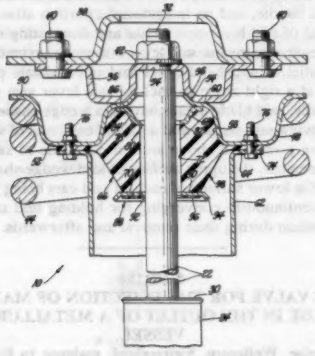


4,219,189

SHOCK-ABSORBING ASSEMBLY

Jerry V. Scrivo, and Peter A. Weller, both of Durham, N.H., assignors to McCord Corporation, Detroit, Mich.

Filed Jan. 24, 1979, Ser. No. 6,076
Int. Cl.[3] F16F *13/00*
U.S. Cl. 267—8 R **2 Claims**



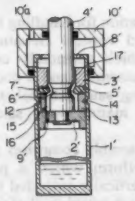
1. A shock-absorbing assembly for use in a suspension system for an automotive vehicle comprising: a shock absorber including a rod and a cylindrical shock-absorbing unit; said rod being disposed in telescoping relationship with said shock-absorbing unit; said shock-absorbing unit being adapted for attachment to a wheel assembly at a first end thereof and having a shoulder surrounding said rod at a second end thereof; said rod extending out of said shock-absorbing unit to a distal end; a mounting plate adapted for attachment to the structure of a vehicle and fixedly connected to said distal end of said rod for anchoring said rod to the structure of a vehicle; a spring surrounding said shock-absorbing unit and said rod; a spring support disposed about and fixed to said shock absorbing unit and engaging a first end of said spring; a spring base disposed about said rod adjacent said distal end thereof and engaging the second end of said spring; said spring base being in engagement with and urged against said mounting plate by said spring; a cylindrical dust cover extending from said spring base about said rod and within said spring; said spring base having a cup-shaped cavity surrounding said rod with said rod extending through the bottom of said cup-shaped cavity and with said cup-shaped cavity opening toward said shoulder of said shock-absorbing unit; and energy-absorbing means including an energy-absorbing block of compressible material disposed about said rod and in said cup-shaped cavity, said block having a first face facing said spring base and a second face facing said shoulder of said shock-absorbing unit, said block having a peripheral disc portion extending radially and clamped between said spring base and said dust cover, said block having a passageway extending between said first and second faces through which said rod extends, a first plate of incompressible material disposed on said first face of said block and having an opening therethrough through which said rod extends, said opening in said first plate being at least as small as the entry of said passageway into said first face of said block, said first plate being circular with a bottom having said opening therein and a conical side wall extending from said bottom away from said first face and toward said bottom of said cup-shaped cavity in said spring base with a rim portion extending radially of said rod from said conical side wall, said rim portion being in engagement with said bottom of said cup-shaped cavity in said spring base, a second plate disposed on said second face of said block, said second plate being dish-shaped with a circular base having an opening disposed about said rod with the periphery of said opening in said circular base being at least as small as the entry of said passageway into said second face of said block, said second plate having a conical flange extending from the periphery of said circular base thereof in a direction away from said second face of said block, said circular base of said second plate having a periphery disposed radially of said rod beyond the periphery of said second face of said block, sound-deadening means disposed over said second plate for inhibiting sound upon engagement of said shoulder of said shock-absorbing unit with said second plate, said block having a conical exterior and extending radially outwardly of said rod from said second plate to said peripheral disc portion of said block.

4,219,190

GAS SPRING

Toshiro Nagase, Sagamihara, Japan, assignor to Tokico Ltd., Kanagawa, Japan

Filed Oct. 12, 1978, Ser. No. 950,618
Claims priority, application Japan, Oct. 20, 1977, 52-125934
Int. Cl.[2] F16F *9/43*
U.S. Cl. 267—65 R **6 Claims**



1. A gas spring comprising:

a cylinder adapted to have filled therein a gas;

a piston slidably disposed within said cylinder;

a piston rod having a first end connected to said piston and

a second end extending outwardly through an end of said cylinder;

said piston rod including a reduced diameter portion at a position adjacent said piston and increased diameter portions on axially opposite sides of said reduced diameter portion;

a seal ring positioned within said cylinder at a location between said piston and said end of said cylinder, said seal ring being capable of axial displacement with respect to said cylinder;

said seal ring having an inner circumference dimensioned to be spaced from said reduced diameter portion of said piston rod, to define therebetween a filling gas passage, when said seal ring and said piston rod are positioned in a predetermined positional relationship to enable gas to be filled through said end of said cylinder and said gas passage into said cylinder;

said inner circumference of said seal ring being dimensioned to seal against an axially outer one of said increased diameter portions of said piston rod after completion of filling said gas into said cylinder; and

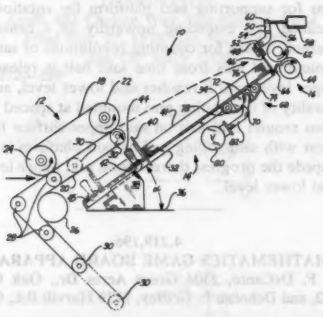
seal ring supporting means for preventing said inner circumference of said seal ring, when said seal ring and said piston rod are positioned in said predetermined positional relationship during filling of said gas, from being deflected axially inwardly against an axially inner one of said increased diameter portions of said piston rod, and from thereby closing said gas passage during said filling, said seal ring supporting means comprising a member positioned within said cylinder between said piston and said seal ring, a portion of said member being positioned radially outwardly of at least a part of said reduced diameter portion of said piston rod.

4,219,191

DOCUMENT FEEDING APPARATUS

Andrew W. Rastorguyeff, Norwalk, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Jan. 8, 1979, Ser. No. 1,617
Int. Cl.[3] B65H *1/06, 3/04*
U.S. Cl. 271—3.1 **4 Claims**



1. In an apparatus for feeding a document along a path from an upstream end to a down stream end, the combination comprising:

a. a longitudinally extended deck upon which a stack of documents may be placed, said deck having an opening therein;

b. means for supporting said deck at an angle relative to the horizontal, the angle being such that documents placed in a stack upon said deck would tend to slide off one another due to gravity;

c. document supply means located at the upstream end of said deck for feeding documents thereto;

d. means for adjusting the location of said support member on said deck;

e. means for adjusting the location where said supply means feeds documents to said deck;

f. a support member attached to and extending laterally upon said deck, said support member being in a position to prevent documents from sliding from said deck;

g. take-away means located at the downstream end of said deck; and

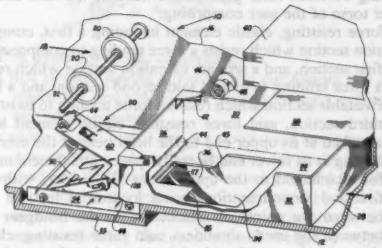
h. a vacuum member received within said opening and positioned to engage the bottommost document of a stack of documents supported by said deck, said vacuum member being operative to convey the bottom-most document in a generally upward direction away from said support member and into engagement with said take-away whereby the friction between the bottom document and the next-to-bottom document is overcome so as to allow the bottom document to be conveyed and the balance of the documents remain in place.

4,219,192

SHEET LOADING AND STORING ASSEMBLY

James E. Burke, Norwalk, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Jan. 3, 1978, Ser. No. 866,560
Int. Cl.[3] B65H *1/12, 3/06*
U.S. Cl. 271—160 **7 Claims**



1. In a machine which utilizes individual sheets of paper stored therein as a stack of sheets and having feeding means for feeding the uppermost sheet from the stack, the improvement in means for loading and storing a stack of sheets in operative position in the machine for feeding of individual sheets seriatim from the top of the stack, said improvement comprising:

A. a receptacle removably disposed in the machine in an operative position for holding a stack of sheets, said receptacle having an opening in the bottom wall thereof and a movable support member received therein for supporting the stack of sheets;

B. movable elevating means mounted in the machine for automatically elevating said support member in said receptacle to bring the uppermost sheet of the stack into feeding engagement with the feed means when said receptacle is in said operative position, said elevating means comprising

1. an elevating member pivotably connected to the machine and adapted to extend upwardly through said opening in the bottom wall of said receptacle when said receptacle is in said operative position,

2. means normally biasing said elevating member upwardly, and

3. a depressing member pivotably connected to the machine and pivotably connected to said elevating member for depressing said elevating member to an inoperative position when said depressing member is depressed; and

C. means on said receptacle and said elevating means operatively engaging each other when said receptacle is being inserted into and removed from the machine for automati-

cally moving said elevating means to an inoperative position in which said elevating means is depressed beneath said receptacle, whereby said receptacle is inserted into and removed from the machine without interference with said elevating means and said elevating means is automatically rendered operable after insertion of said receptacle.

4,219,193

SIMULTANEOUS NECK STRENGTHENER, NECK PROTECTOR, NECK REHABILITATOR

Joseph W. Newman, Rte. 1, Box 71-B, Lucedale, Miss. 39452

Filed Nov. 3, 1977, Ser. No. 848,308
Int. Cl.[2] A41D *13/00*
U.S. Cl. 272—94 **22 Claims**

1. A neck device for resisting movement of the head and for wearing between head gear on the head of the user and the upper torso of the user comprising:

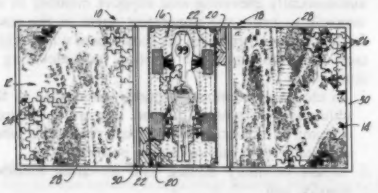
a force resisting, elastic element including a first, compression section which resists a force tending to compress said first section, and a second, extension section which resists a force tending to extend said second section, and a third twistable section which resists a force tending to twist said third section, said force resisting, elastic element being attached at its upper end to the head gear of the user and having at its lower end laterally spaced attachment means for attachment to the upper torso of the user, with said first and second sections being located at least in part between the points of attachment to the headgear and between the user's shoulders, said force resisting, elastic element being positioned when attached to the user being centrally located with respect to the neck of the user, said force resisting, elastic element resisting movement of the user's head in moving forward, backward and turning sideways from a neutral position of the head being upright and looking forward.

4,219,194

JIGSAW PUZZLE GAME

Robert B. Powers, 294 Lincoln Rd., Grosse Pointe, Mich. 48230

Filed Nov. 13, 1978, Ser. No. 959,576
Int. Cl.[2] A63F *9/10*
U.S. Cl. 273—54 B **7 Claims**



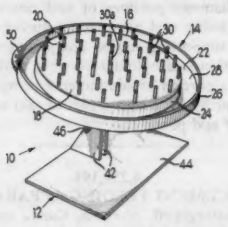
1. A jigsaw puzzle game comprising a first set of at least two jigsaw puzzles with all of the puzzles of the first set having essentially the same picture, the same number of pieces, and corresponding pieces having the same configuration and being interchangeable, and a second set of at least two jigsaw puzzles with all of the puzzles of the second set having essentially the same picture, the same number of pieces, and corresponding pieces having the same configuration and being interchangeable so that each player can utilize pieces from one of the puzzles of the second set in assembling a single common jigsaw puzzle, which, when assembled, may contain some of the pieces from each of the puzzles of the second set, at least one of the picture and configuration of the pieces of said first set of puzzles differing from at least one of the picture and configuration of the pieces of said second set of puzzles, each piece of each puzzle of said second set having indicia thereon identifying the particular puzzle of said second set to which such piece belongs, each player being assigned one puzzle from each set, and each player completing assembly of his assigned puzzle from said first set before beginning to assemble the common puzzle by utilizing pieces from his assigned puzzle of said second set.

4,219,195

MANUAL MANIPULATION GAME

Jeffery D. Breslow, Highland Park, and Eugene Jaworski, Park Ridge, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Dec. 29, 1978, Ser. No. 974,349
Int. Cl.[3] A63F *7/02, 7/24*
U.S. Cl. 273—110 **11 Claims**



1. A manipulation toy comprising:

a platform having a sloping upper surface for supporting a rolling ball placed thereon at an upper level for rolling movement toward a lower level,

means for supporting said platform for rotation about an inclined axis extending upwardly of a central portion thereon, means for counting revolutions of said platform around said axis from time said ball is released at said upper level until it reaches said lower level, and

a plurality of upstanding pins mounted at spaced apart positions around said axis on said upper surface for engagement with said rolling ball as said platform is rotated to impede the progress thereof from said upper level toward said lower level.

4,219,196

MATHEMATICS GAME BOARD APPARATUS

Joseph F. DeCanto, 2304 Green Acres Dr., Oak Grove, Ky. 42262, and Deborah L. Griffey, 2139 Harvill Rd., Clarksville, Tenn.

Filed Nov. 20, 1978, Ser. No. 962,287
Int. Cl.[3] A63F *3/00*
U.S. Cl. 273—126 R **6 Claims**

1. Game apparatus comprising:

(a) a base board having a center,

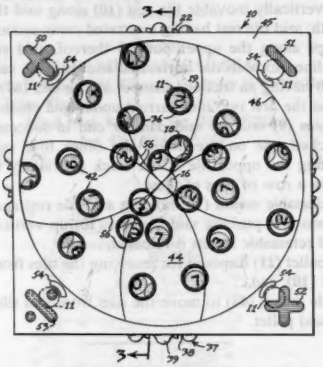
(b) an indicia board having a center and a plurality of indicia spaces substantially covering said indicia board about said center, each indicia space including a number and an indicia of mathematical function,

(c) a matching board over said indicia board having a center and a plurality of matching openings therethrough for viewing portions of at least one of said indicia spaces in

various relative rotary positions of said matching board and said indicia board,

(d) a registry board over said matching board having a center and a plurality of registry openings therethrough identical in number, size, shape and position to said matching openings,

(e) rotary mounting means supporting said registry board, said matching board and said indicia board upon said base board for free relative rotary movement of said registry



board, said matching board and said indicia board about said center, whereby said registry board may be rotated to a registry position in which said registry openings register with the corresponding matching openings,

(f) a transparent sheet member fixed to said base board and disposed over said registry board,

(g) at least one playing piece of a size comparable to the size of each opening through said matching board, said playing piece being adapted to be supported on said transparent sheet member.

4,219,197

WORD GAME USING CARDS AND A ROW DESIGNATOR

Daniel S. Acuff, 441 Chelsea Way, San Gabriel, Calif. 91775

Filed Nov. 27, 1978, Ser. No. 964,033

Int. Cl.[2] A63F *1/00*

U.S. Cl. 273—299 **2 Claims**

2. A deck of playing cards having specific word component indicia displaying therein wherein the frequency of distribution of the word components is according to the following:

Single vowels	30
Double vowels	2
Diphthongs	6
Single consonants	31
Double consonants	2
Prefixes	21
Suffixes	21
Blends	23

4,219,198

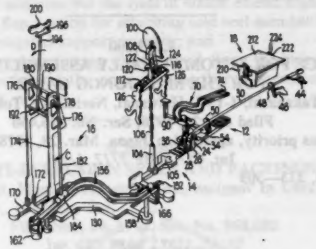
AMUSEMENT DEVICE

Burton C. Meyer, Downers Grove, and Ralph J. Kulesza, Chicago, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Jan. 26, 1978, Ser. No. 872,428

Int. Cl.[3] A63F *9/02*

U.S. Cl. 273—399 **5 Claims**



1. A game apparatus, comprising:

a first element having a manual trip mechanism and an arm biased for upward pivotal movement upon actuation of said trip mechanism;

a slider on said biased arm for downward movement due to gravity when said arm is generally vertically oriented;

second and third elements in proximity to said first element and each having trip means for actuation by said arm and said downwardly moving slider, respectively, said trip means releasing first and second weighted objects for movement under the influence of gravity;

a fourth element in proximity to said second element for engagement by one of said weighted objects, said fourth element including release means actuated by said weighted object and launching means associated with said release means for launching a playing piece; and

said first, second and third elements each including support bases for supporting the elements on a suitable supporting surface in a spatial arrangement.

4,219,199

DIAMOND WITH MOLYBDENUM BONDED THERETO

Kazumi Okuda, No. 14-10-302, 2-chome, Sangenjaya, Setagaya-ku, Tokyo, Japan

Filed Nov. 2, 1977, Ser. No. 847,941

Claims priority, application Japan, Dec. 24, 1976, 51-156000

The portion of the term of this patent subsequent to Nov. 8, 1994, has been disclaimed.

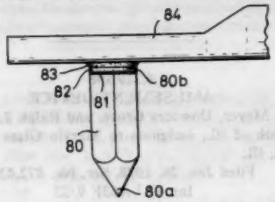
Int. Cl.[2] G11B *3/44*; A44C *17/00*

U.S. Cl. 274—38 **8 Claims**

1. A diamond having an exposed molybdenum film of about 10 to 50 A in thickness bonded to at least a portion of its surface, said film incapable of being dissolved by hydrogen peroxide.

8. A diamond particle having a molybdenum film of about 10 to 50 A in thickness bonded to at least a portion of its surface, said film incapable of being dissolved by hydrogen peroxide, said article having the shape of a stylus for reproducing a record disc and having the bonded film of molybdenum on the upper end of said stylus, said film having a layer of a metal

other than molybdenum adhering directly to its surface, said metal being suitable for cementing by solder to a stylus holding



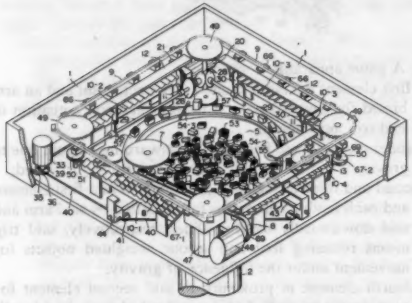
member, and a stylus holding member cemented to said metal layer by means of said solder.

4,219,200

DEVICE FOR AUTOMATICALLY ASSEMBLING TILES FOR THE MAH-JONGG GAME

Izumi Takahashi, 1-15-4, Heiwadai, Nerima-ku, Tokyo, Japan

Filed Jul. 20, 1978, Ser. No. 926,460
Claims priority, application Japan, Mar. 28, 1978, 53-34885
Int. Cl.[2] A63F *1/12, 1/14*
U.S. Cl. 273—309 **1 Claim**



1. A game table with a mechanism for automatically assembling tiles which have an iron piece adjacent one surface in rows at least two tiers high, comprising in combination:

(a) a horizontal flat deck as a part of said table with at least one aperture (4') in said deck, and a door (4) hinged thereto, flush with said deck, an arm (16) holding said door normally shut, a pawl (17) engaged with said arm (16) and a solenoid (15) which when energized will move said pawl (17) to allow said door to swing partly open so that tiles on said deck can be discharged downwards at random;

(b) a horizontal turntable with an upper surface (5) under said deck, receiving said tiles with a plurality of barrier bars (54-1; 54-2) to overturn upright tiles and make them lie flat and to move the tiles to the turntable periphery;

(c) a circular link (6) disposed around the turntable having one portion of its periphery lower than the upper surface of the turntable receiving flat down tiles thereon from said turntable, and carrying said tiles along a first travel path;

(d) rotating selector means (7) with an underside along said travel path so disposed that the tiles on said link (6) pass thereunder, magnets (59) at said underside disposed to attract those tiles having an iron piece at the surface adjacent said magnets (59), the remaining tiles being returned by said link to said turntable surface (5) where they are again turned around by barriers and again moved onto said link (6), whereas the tiles attracted by said magnets to said underside travel along a second travel path with said selector means (7);

(d) a plate (64) along said travel path and a slope conveyor (8) disposed for cooperation with said plate (64), said plate blocking further movement of said tiles along said second travel path and forcing them onto said slope conveyor, said slope conveyor (8) having a stopper (65) at one end;

(e) chain conveyor means (9) with magnets (59) at the underside thereof disposed to pass by said stopper (65) and pick up said tiles and carry them along a third travel path;

(f) a vertically movable tile rest (10) along said third travel path, said tile rest having a serrated cross-section forming steps along the upper portion thereof, said steps being inclined to both the horizontal and vertical, said tile rest (10) having an inclined damper at one end (67) so that at least the first two tiles carried under said chain conveyor means (9) will hit said damper end in succession to be stacked one on the other, the other tiles successively hitting the upper tile of the stack previously formed to form a row of tiers of tiles;

(g) releasable means (70) holding said tile rest and a spring means (71) pushing said tile rest (10) up vertically when said releasable means is released;

(h) a pallet (21) disposed for receiving the tiles from said tile rest (10); and,

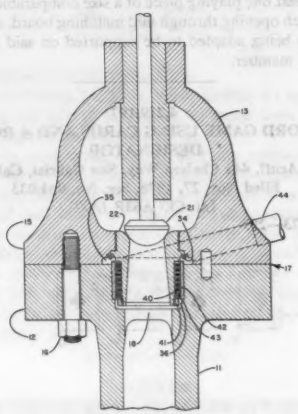
(i) slide means (44) to move the tiles from said tile rest (10) to said pallet.

4,219,201

SEALING ASSEMBLY

William A. Straslicka, Norvelt, Pa., assignor to Carrier Corporation, Syracuse, N.Y.

Filed May 24, 1978, Ser. No. 909,132
Int. Cl.[2] F16U *15/44*
U.S. Cl. 277—53 **5 Claims**



1. A combination fluid chamber and casing comprising:

means defining a bottom surface of the fluid chamber;

means defining a top surface of the casing adjacent to the bottom surface of the fluid chamber, the bottom surface of the fluid chamber and the top surface of the casing defining an interface;

means defining a fluid aperture extending through the interface for transmitting a fluid from the fluid chamber into the casing;

a sealing element positioned within the fluid aperture and extending through the interface for preventing direct contact between the fluid and the interface;

means connecting the sealing element with the fluid chamber for forming a fluid tight joint therebetween;

means defining an auxiliary chamber in communication with the interface;

means defining a first passageway for passing fluid from the casing into the auxiliary chamber;

means for reducing the pressure of fluid passing through the first passageway for developing a pressure in the auxiliary chamber less than the pressure in the casing; and

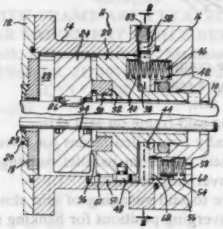
means defining a second passageway for transmitting fluid from the auxiliary chamber to a low pressure region for maintaining the pressure in the auxiliary chamber less than the pressure in the casing.

4,219,202

AXIAL MECHANICAL SEAL

Rudolf Koch, Beaconsfield, Canada, assignor to Tyton Seal, Inc., Pointe Claire, Canada

Filed May 8, 1979, Ser. No. 37,216
Int. Cl.[2] F16J *15/34*
U.S. Cl. 277—93 SD **18 Claims**



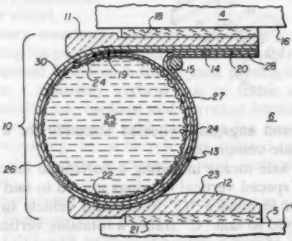
1. In an axial mechanical seal including a housing with an annular inner space containing fluid under pressure, a seal ring and a carrier means supporting said seal ring in said annular space, said seal ring and said carrier means being axially and radially displaceable in said annular space when subjected to heavy vibrations: a series of pockets annularly disposed in said housing; compensator means in each said pocket, said compensator means consisting of resilient yielding means having a portion in contact with said fluid under pressure; said resilient means yielding in said pocket to accept fluid displacement as a result of axial movement of said seal ring and said carrier means in said annular space.

4,219,203

THERMAL BARRIER PRESSURE SEAL

Alan M. Lovelace, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; John Bellavia, Jr., LaPalma, and John O. Kane, Long Beach, both of Calif.

Filed Dec. 29, 1978, Ser. No. 974,472
Int. Cl.[3] F16U *15/02*
U.S. Cl. 277—181 **2 Claims**



1. Apparatus for providing thermal and pressure sealing in an elongated space of varying width between adjacent surfaces of first and second members mounted for at least limited lateral movement therebetween, said apparatus comprising:

a first elongated support member, having a surface which is at least partially concavely curved, attached to one of said first and second member adjacent surfaces;

a second elongated support member attached to the other of said first and second member adjacent surfaces;

an elongated seal member sandwiched between said support members which in its nondeformed state is substantially cylindrical but which is capable of deformation to accommodate varying widths of space and said limited lateral movement between said first and second members wherein said elongated seal member comprises a core of relatively low thermal conductivity and an outer covering of relatively high pressure resistance wherein said outer covering comprises a sheet of flexible material wrapped around said core but the ends of which extend together to form a flap portion for attaching said seal member to said first elongated support member; and

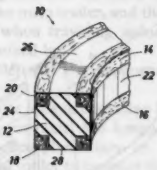
an elongated tensioning rod disposed along the base of said flap portion on the opposite side thereof from said first support member.

4,219,204

ANTI-EXTRUSION SEALS AND PACKINGS

Frederick B. Pippert, Houston, Tex., assignor to Utex Industries, Inc., Houston, Tex.

Filed Nov. 30, 1978, Ser. No. 965,033
Int. Cl.[2] F16J *15/22, 15/32*
U.S. Cl. 277—188 A **46 Claims**



1. An anti-extrusion sealing device comprising:

a generally non-metallic body section, said body section having at least one sealing surface, and

an anti-extrusion section contiguous at least a portion of said body section, said anti-extrusion section serving to resist extrusion forces acting on said body section adjacent said anti-extrusion section, said anti-extrusion section being comprised of a knitted material, at least some of the filaments of said knitted material being metallic in nature.

4,219,205

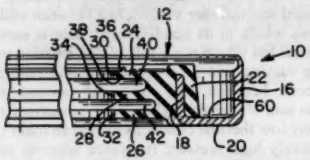
MULTIPLE LIP SEAL

Keith W. Christiansen, Fox River Grove, and Jerry D. Reichenbach, Carpentersville, both of Ill., assignors to CR Industries, Elgin, Ill.

Filed Mar. 7, 1979, Ser. No. 18,116
Int. Cl.[2] F16J *15/44, 15/32*
U.S. Cl. 277—208 **7 Claims**

1. A multiple lip fluid seal assembly comprising, in combination, a generally annular, rigid seal casing portion and a generally annular elastomeric, primary seal forming portion, said casing portion being generally U-shaped in cross section and having first and second, radially spaced apart, axially extending flanges, and a third, radially extending flange joining said first and second axial flanges together, said second axial flange being adapted to be received within a first part of a sealed mechanism and to form, in cooperation therewith, a fluid-tight secondary seal, said elastomeric portion comprising a generally axially extending body portion bonded to and surrounding said

first axial casing flange and a flexible portion for engaging a second part of a sealed mechanism, said flexible portion including a plurality of axially spaced apart sealing lips extending radially from said body portion, including an axially inner lip, an axially outer lip, and at least one lip immediate said inner and outer lips, all of said lips having sealing edges on the



portions thereof lying remote from said body portion, with said axial flange lying within said seal body and extending sufficiently axially therethrough so as to have portions lying in radially spaced apart, axially overlapping relation to at least a part of each of said lips so as to provide substantially equal radial stiffness to all of said lips.

4,219,206

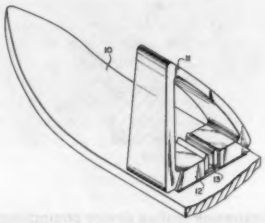
ANTI-TIP CROSSING DEVICE FOR SKIS

Craig R. Kjesbo, Ketchum, Id., assignor to Performance Counts, Inc., Ketchum, Id.

Filed Jan. 16, 1978, Ser. No. 869,666

Int. Cl.[2] A63C *11/00*

U.S. Cl. 280—817 **10 Claims**



1. An anti-tip crossing device for skis adapted to be mounted on the front upper surface of a ski substantially perpendicular thereto, comprising a generally triangular annulus made of resilient plastic and having two upstanding sides and a base completely encircling a central open space except for a gap in the middle of said base, said base being positioned transversely across substantially the entire width of said ski, a first side of said annulus adjacent the inner edge of said ski extending substantially perpendicularly from the upper surface of the ski at its inner edge to an apex, a second side of said annulus extending from the upper surface of the ski at its outer edge to said apex in convexly arcuate shape, said annulus being detachably mounted to the upper surface of the ski by means of a base plate fixed to the upper surface of the ski and positioned transversely thereof, said base plate comprising two tubular portions aligned with each other and spaced apart from each other near the center of the ski, said base of said annulus comprising two separate prongs joined respectively to said first side and said second side and projecting toward each other, the cross-section of each prong being substantially the same size and shape as the cross-section of said tubular portions of said base plate except for a flange member at the free end of each prong which is sufficiently larger than said cross-section so as to be insertable when compressed into the tubular portion and to expand to the uncompressed state in the central space between said tubular portions to form a tight fastening of the flange member to said base plate.

4,219,207

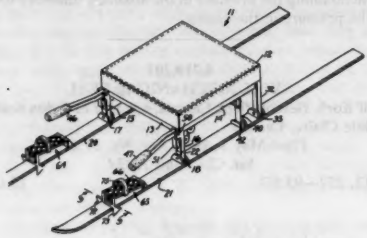
SKI SUPPORTED VEHICLE

James R. Muir, and Ruby J. Muir, both of 11287 Weber St., Sunnymead, Calif. 92388

Continuation of Ser. No. 839,162, Oct. 4, 1977, abandoned. This application Nov. 20, 1978, Ser. No. 962,473

Int. Cl.[2] B62B *13/08*

U.S. Cl. 280—21 A **8 Claims**



1. A ski machine comprising:

a frame including a seat;

a pair of spaced skis;

means supporting said frame on said skis;

individual manually controlled means for swinging respective ones of said skis from parallel running positions to forwardly converging positions;

means responsive to said swinging of said skis toward said forwardly converging positions for banking said skis; and

means responsive to movement of a first one only of said skis to said converging position to cause the other of said skis to swing to a position at least substantially parallel to said first ski.

4,219,208

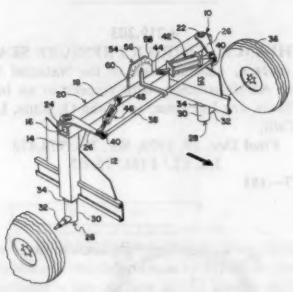
STEERABLE WHEELED ASSEMBLY

Niles H. Fuller, Idaho Falls, and Melvin G. Grover, Rigby, both of Id., assignors to Logan Farm Equipment Co., Inc., Idaho Falls, Id.

Filed Feb. 16, 1978, Ser. No. 878,360

Int. Cl.[2] B62D *7/08, 13/00*

U.S. Cl. 280—95 R **14 Claims**



1. A ground engaging wheeled assembly for a drawn or trailed vehicle comprising:

steerable axle means including a horizontal member and a pair of spaced vertical housings jointed to said horizontal member forming a "C" frame, said vehicle supportingly connected to said "C" frame, a rotatable vertical member in each of said housings having an upper end extending from said housing and pivotally connected to said "C" frame and a lower end extending from said housing including spindle means on which a ground engaging wheel

is rotatably supported and adapted to pivot when said vertical members are rotated;

a pivot arm fixed to each upper end of said vertical members for rotating said members when said arms are pivoted;

a tie rod pivotally connecting said arms and positioned between them whereby pivoting of one of said arms effects a corresponding pivoting of the other of said arms;

pivoting means carried by said vehicle operatively associated with one of said arms for pivoting said arm and steering said wheeled assembly;

turn indication means located on the vehicle operatively associated with said axle means for indicating the turning angle and steering direction of the wheels of said assembly; and

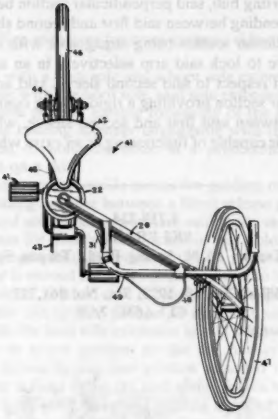
pivot arm locking means for fixing the turn angle of said wheels of said assembly in a preselected position, said locking means being a rigidifiable extendible member connecting one of said arms to said horizontal member.

4,219,209

BICYCLE WITH FRAME ARTICULATED TO UNDERGO ANGULAR MOVEMENT WHILE BEING RIDDEN

Frank P. Haack, 6 Dorfmeister Ct., Madison, Wis. 53714

Filed Jul. 21, 1976, Ser. No. 707,434
Int. Cl.² B62K *19/00, 21/00*
U.S. Cl. 280—278 **3 Claims**



1. A bicycle with an articulated frame which enables a rider to engage in trick and novelty riding using his legs to assist in angularly aligning the bicycle frame while riding the bicycle comprising

(a) a steerable front wheel and fork assembly wherein said fork is configured with a journaled stem and has affixed thereto a handlebar,

(b) a rear wheel,

(c) a unitary rear frame member comprising a rear wheel mounting leg portion extended rearmost, a sprocket housing disposed foremost, a frame joint portion disposed to provide a relatively vertical axis of frame articulation substantially intermediate said sprocket housing and the rearmost extension of said mounting leg portion, and a fixed mounting, for a bicycle seat located on said rear frame just slightly rearward of said vertical axis joint portion,

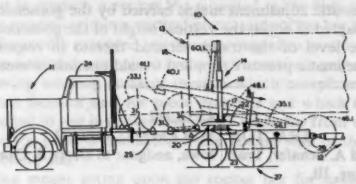
(d) a unitary front frame member comprising a means disposed foremost of the front frame for receiving said journaled front fork stem, a rearmost disposed front frame joint portion operatively coupled to said frame joint portion of said rear frame member, the front frame member thereby extending between the legs of the rider and thus enabling the front member to be angularly positioned with respect to the rear frame member about said vertical joint portion by the lateral movement of the rider's legs when the bicycle is being ridden.

4,219,210

AUXILIARY TRAILER

Allan G. Genberg, Langley, Canada, assignor to L. Knight and Company Limited, Langley, Canada

Filed May 12, 1978, Ser. No. 905,210
Int. Cl.² B62D *53/06*
U.S. Cl. 280—401 **8 Claims**



1. An auxiliary trailer for towing behind a tractor and main trailer combination adapted to carry an elongated self-supporting load, in which: the tractor has a forward coupling means cooperating with forward load supporting means to carry a forward end of the load; and the main trailer has: a rear axle supporting in part the main trailer, a main trailer reach extending forwardly from the rear axle to couple the main trailer to the tractor for towing therebehind, and a first coupling means adjacent the rear of the main trailer, and the tractor is adapted to carry the trailer when traveling unloaded; the auxiliary trailer being characterized by:

(a) an auxiliary trailer rear axle supporting in part an auxiliary trailer,

(b) an auxiliary trailer tongue extending forwardly from the auxiliary trailer rear axle, the tongue having a second coupling means complementary to the first coupling means of the main trailer to connect therewith for towing the auxiliary trailer behind the main trailer,

(c) an aft coupling means positioned on the auxiliary trailer tongue rearwardly of the second coupling means and forwardly of the auxiliary trailer rear axle and adapted to cooperate with aft load supporting means to support an aft portion of the load to obtain desired axle loading,

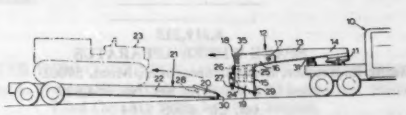
(d) a connector to interconnect the main trailer reach and the auxiliary trailer tongue when the tractor carries the trailers and the tongue and reach extend parallel to each other and are spaced apart vertically relative to each other.

4,219,211

TRAILER CONNECTION MEANS

Leon P. Sauers, 2559 Barton St. E., Hamilton, Ontario, Canada

Filed Dec. 22, 1978, Ser. No. 972,329
Int. Cl.² B62D *53/06*
U.S. Cl. 280—425 A **9 Claims**



1. A gooseneck for connecting a tractor and a trailer for transportation, said gooseneck comprising:

a generally upright first section having a main upstanding portion adapted to be releasably secured in rigid fashion to the front of a trailer, and a forwardly projecting part;

a second section in the form of a forwardly extending, gener-

ally horizontal beam, adapted to be pivotally connected to the fifth wheel of the tractor;

a pivotal connection between the first section and the second section, said connection being disposed on the forwardly projecting part of the first section, and the generally horizontal beam extending rearwardly from said pivotal connection to a position vertically above the main upstanding portion of said first upright section;

said pivotal connection connecting said first and second sections for pivotal movement therebetween about a generally horizontal axis, to permit adjustment of the overall vertical height of the gooseneck and the level of the front of a trailer secured thereto;

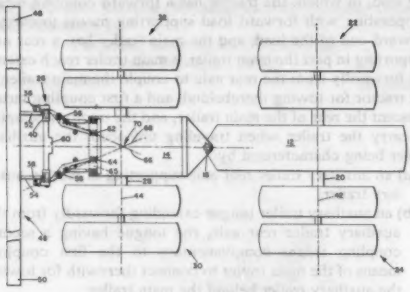
pneumatic adjustment means carried by the gooseneck and adapted to adjust the vertical height of the gooseneck and the level of the trailer secured thereto in response to pneumatic pressure supplied to said pneumatic means.

4,219,212

TRACTOR IMPLEMENT HITCH

Richard A. Schafer, Traer, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Dec. 11, 1978, Ser. No. 968,360
Int. Cl.³ A01B *59/043*; B60D *1/00*
U.S. Cl. 280—460 A **2 Claims**



1. An improved implement hitch for use on a four-wheel drive tractor which allows for better implement trailing and stability, said tractor having an articulated joint located approximately at the midpoint between fore-and-aft axles on which pairs of ground engaging wheels are rotatably mounted,

(a) a pair of fore-and-aft extending draft links containing a pair of spherical bearings in the fore ends and a pair of couplers in the aft ends, said spherical bearings joining said draft links to a rockshaft traversely mounted on the rear of said four-wheel drive tractor, and said couplers coupling said draft links to a trailing implement;

(b) means for supporting said aft ends of said draft links in a spaced relationship for enabling forces which act on said trailing implement to be transmitted through said draft links, said draft links defining two lines of force which extend forward into said four-wheel drive tractor and intersect at a point located between said aft axle and said articulation joint.

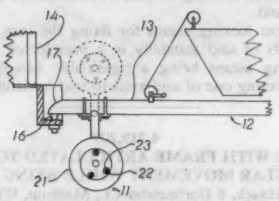
4,219,213

SPARE WHEEL APPARATUS

Duane E. Butcher, Box 42, Absarokee, Mont. 59001

Filed Oct. 26, 1978, Ser. No. 954,939
Int. Cl.² B60S *9/04*
U.S. Cl. 280—475 **4 Claims**

1. Apparatus for mounting a spare wheel on a trailer tongue including a wheel supporting hub, a first shaft extending from the rear of said wheel supporting hub, said shaft being rotatably carried within a first shaft supporting sleeve, means for retaining said first shaft with said first sleeve, an arm extending from said sleeve substantially perpendicularly to the axis of said first shaft disposed within said first sleeve, the end of said arm remote from said first sleeve being affixed to one end of a second shaft, said second shaft being disposed substantially parallel to said first shaft and extending from said arm in a direction opposite to that from which said wheel supporting hub extends from said first shaft, a second sleeve disposed about said second shaft, biasing means associated with said second shaft urging said arm toward said second sleeve, said biasing means including coil spring means positioned over the end of said second shaft remote from said arm, locking means for fixing said arm with respect to said adjacent second sleeve



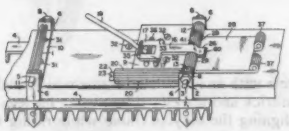
in more than one position, and means associated with said second sleeve for securing said apparatus to said trailer tongue; said arm including a section substantially perpendicular to said wheel supporting hub, said perpendicular section being aligned with and extending between said first and second shaft sleeves, said perpendicular section being engageable with slots in said second sleeve to lock said arm selectively in an up or down position with respect to said second sleeve, said arm and said perpendicular section providing a rigid, strong connection of a T-section between said first and second sleeve, whereby said spare wheel is capable of functioning as an extra wheel for said trailer.

4,219,214

SKI BRAKE

Dimitar C. Kostov, 36 N. Spring Blvd., Tarpon Springs, Fla. 33589

Filed Dec. 19, 1977, Ser. No. 861,717
Int. Cl.² A63C *7/10*
U.S. Cl. 280—605 **6 Claims**



1. A ski brake of the type operable by a ski binding with a base plate pivotally attached to the ski including a forwardmost end extending beyond a boot secured to the ski binding and used to decrease speed and stop a ski to which the brake is attached, said ski brake comprising: base means secured to the upper surface of the ski, a pair of brake plates movably interconnected to said base means and disposed on opposite sides of the ski in substantially parallel relation to one another, at least one axle rotatably secured to said base means and interconnected to said brake plates so as to effectively rotate therewith, an activating member mounted on said base means and having one end portion extending into interruptive engagement with the forwardmost end of the base plate of the ski binding, said activating member including an extension means projecting towards said one axle into interruptive, abutting relation to at least a first step portion of one axle, said activating member, said one axle and said one step portion disposed relative to one another and the binding secured to the ski to cause pivoting of said axle and consequent disposition of said pair of brake plates

into braking engagement with the supporting surface on which the subject ski is positioned as said binding pivots.

4,219,215

CROSS-COUNTRY SKI BINDNG WITH RETAINING MEANS FOR A FORWARDLY EXTENDED BOOT SOLE

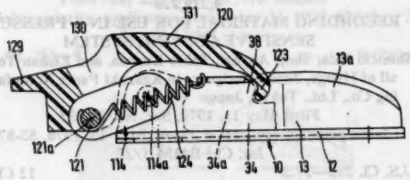
Peter Biermann, Warmbronn; Otto Ewald, Griesheim; Rudi Feucht, Weissach, and Manfred Schmidt, Sindelfingen, all of Fed. Rep. of Germany, assignors to Vereinigte Baubeschlagfabriken Gretsch & Co. GmbH, Fed. Rep. of Germany

Filed Sep. 26, 1977, Ser. No. 836,362

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1976, 2643223

Int. Cl.² A63C *9/10*

U.S. Cl. 280—615 **48 Claims**



1. Ski binding apparatus for cross-country skiing and the like comprising:

a ski boot with a boot sole and a boot sole extension formed integrally with the boot sole, said sole extension having an entrainable portion located forwardly of the ski boot,

a boot sole holding member engageable with the boot sole extension to hold the same in a predetermined in-use position on a ski,

and holding member guide means for guiding movement of said holding member between a lifted release position and a lowered sole holding position, said guide means including means for assuring movement of said holding member in the longitudinal direction of the ski when said holding member is moved from its release position to its sole holding position so that said holding member positively entrains the entrainable portion of said boot sole extension and pulls the boot sole extension in said longitudinal direction to its in-use position on the ski, further comprising spring means having one portion attached to a binding part that is fixed to the ski, said spring means being configured to resiliently force said holding member toward each of said release and holding positions.

4,219,216

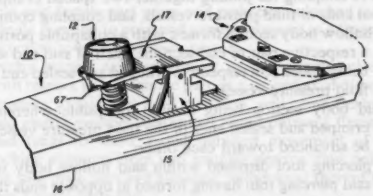
NORDIC SKI BINDING

Richard J. Settembre, 714 Velasko Rd., Syracuse, N.Y. 13207

Filed Mar. 15, 1979, Ser. No. 20,794

Int. Cl.³ A63C *9/086*

U.S. Cl. 280—615 **10 Claims**



1. A cross country ski binding that includes

a toe piece adapted to be attached to the forward end of the ski book having a vertical front wall whose side edges lie upon vertically extended lines, a horizontal top wall, and a pair of openings passing downwardly through the top wall that are equally spaced on either side of the central axis of the toe piece, the front face of each opening being planar in form and sloping toward the heel of the ski boot from its top edge towards its bottom edge and each face being angularly offset with reference to said front wall to turn the faces outwardly from central axis,

a ski piece that includes an open sided base section for slidably receiving the toe piece therein to limit vertical movement of said toe piece and having an arresting wall against which the two side edges of the front wall of the toe piece rest in contact, a rocker bar mounted in the base section for rotation within a vertical plane, said rocker bar having a forwardly extended leg that is arranged to pass over the top wall of the toe piece and which contains a pair of lugs having working surfaces thereon which compliment the front faces of said toe piece openings and which are arranged to rest in contact therewith when the front wall of the toe piece is contacting the arresting wall of the base section, and

biasing means acting upon the rocker bar for urging the working surfaces of said lugs into pressure contact against the front faces of said receiving openings.

4,219,217

RELEASABLE TOE HOLDER FOR SKI BINDING

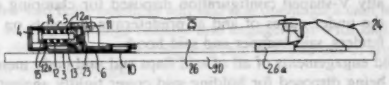
Ulrich Gertsch, Matten, Switzerland, assignor to Etablissements Francois Salomon et Fils, Annecy, France

Filed Jun. 26, 1978, Ser. No. 919,051

Claims priority, application Switzerland, Jun. 29, 1977, 7957/77

Int. Cl.² A63C *9/085*

U.S. Cl. 280—629 **9 Claims**



1. A releasable toe holder for a ski binding, comprising:

a sole holder for holding the toe end of ski boot;

a pedal connected with said sole holder and intended to engage beneath the sole end of a ski boot;

a pivot plate mounted for transverse pivotable movement with respect to the lengthwise direction of the ski and extending below said pedal;

first pivot means provided for said pivot plate to fixedly secure said pivot plate to the ski;

release means acting directly on said pivot plate and comprising a spring element for retaining the pivot plate in a normal position and for returning said pivot plate back into said normal position following a limited transverse movement thereof;

second pivot means provided for said pedal for mounting said pedal on said pivot plate for transverse movement unrestrained by said release means; and

said second pivot means being arranged behind said sole holder.

4,219,218

HALTER TYPE COVER FOR CAR FRONT PROTECTION

Chester L. Waldon, 2019 High St., Apt. 4, Oakland, Calif. 94601

Filed Oct. 11, 1977, Ser. No. 840,666

Int. Cl.² B62D *25/00*

U.S. Cl. 280—770 **1 Claim**

1. An easily removable halter type cover of flexible material disposed to cover the front end only of an automobile exclusive of the windshield adapatable for use while the car is in forward motion at high speeds comprising a body member and a plurality of peripheral members protruding from the center

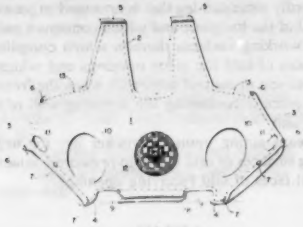
portion of said body member said peripheral members comprising:

a pair of parallel top flaps disposed for engagement with air vents positioned on the top of the hood of said automobile;

a pair of side flaps on opposite sides of said center portion disposed for engagement with the lower edges of the front fenders of said automobile;

a pair of front flaps on opposite sides of said center portion adjacent to said side flaps disposed for engagement with the lower edge of the front bumper of said automobile;

a front center flap on the mid-section of said center portion opposite to said top flaps disposed for engagement with the lower front edge of the hood of said automobile;



a liner of resilient material positioned on the under surface of said cover disposed for engagement with the surface of said automobile front;

a plurality of spring clamps fixedly positioned on the outer edges of said peripheral members disposed to effect the said engagement with said edges of said fenders, said bumper and said hood, said spring clamps having generally V-shaped configuration disposed for clamping over the under edges of and at predetermined points on said fenders, said bumper and said hood;

said engagements of all of said flaps and said body member being disposed for holding said cover tightly against the surface of said hood and said front end of said car thereby securing said cover in position while said car is moving forward at high speeds.

4,219,219

DEVELOPERS FOR PRESSURE-SENSITIVE RECORDING AND DEVELOPING SHEETS CONTAINING THEM

Kozo Sato, Minami-ashigara, and Hajime Kato, Fujinomiya, both of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

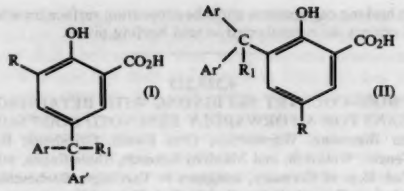
Filed Mar. 5, 1979, Ser. No. 17,862

Claims priority, application Japan, Mar. 6, 1978, 53-25158

Int. Cl.[2] B41M 5/16, 5/22

U.S. Cl. 282—27.5 **9 Claims**

1. In a pressure-sensitive recording material comprising a support having coated thereon a developer and a layer of microcapsules containing a color former coated on the same or an independent support, the improvement which comprises: said developer being a polyvalent metal salt of a substituted salicylic acid represented by the following general formula (I) or (II)



wherein R represents a hydrogen atom, an alkyl group, an aralkyl group or an aryl group, R_1 represents a hydrogen atom, an alkyl group, an aryl group or an aralkyl group, and Ar and Ar′ which may be the same or different each represents an aryl group.

4,219,220

RECORDING MATERIAL FOR USE IN A PRESSURE SENSITIVE COPYING SYSTEM

Shinichi Oda; Shoji Aoyagi; Takio Kuroda, and Eishun Tozaki, all of Hyogo, Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Tokyo, Japan

Filed May 11, 1979, Ser. No. 38,233

Claims priority, application Japan, May 15, 1978, 53-57902

Int. Cl.[3] B41M 5/22

U.S. Cl. 282—27.5 **12 Claims**

1. A recording material for use in a pressure sensitive copying system comprising a base sheet, an undercoating layer formed on a surface of said base sheet and a color former coating layer formed on said undercoating layer, said color former layer including microcapsules each encapsulating an oil droplet containing a color former material dissolved or dispersed therein, and said undercoating layer comprising finely divided inorganic pigment particles and a binder said undercoating layer being substantially unreactive with said color former material included in said color former layer, said pigment particles being selected from the group consisting of polyvalent metal carbonates, polyvalent metal oxides, polyvalent metal hydroxides, polyvalent metal silicates and clay minerals.

4,219,221

COUPLING FOR REJOINING SEALED TUBING

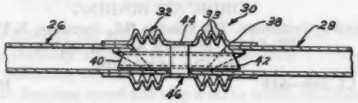
William M. Webb, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Division of Ser. No. 859,770, Dec. 12, 1977, Pat. No. 4,162,566.

This application Feb. 26, 1979, Ser. No. 15,392

Int. Cl.[2] F16L 35/00

U.S. Cl. 285—3 **11 Claims**



1. A coupling for joining together two spaced crimped and sealed ends of fluid pressure vessels, said coupling comprising:

a hollow body section formed with a collapsible portion and a respective pair of end sections, each of said end sections being sealed to a respective crimped and sealed end of said fluid pressure vessels;

said body section being axially collapsible whereby said crimped and sealed ends of the fluid pressure vessels may be advanced toward each other;

a piercing tool disposed within said hollow body section, said piercing tool having formed at opposite ends thereof, a pair of penetrating ends each having a sharp pointed end directed toward a respective end section, adapted to penetrate said crimped and sealed ends of said fluid pressure vessels to provide pierced openings, said piercing tool

cooperating with the body section to have axial movement relative to each fluid pressure vessel crimped and sealed end and its respective penetrating end limited to a distance less than the total distance of axial collapse of the body section;

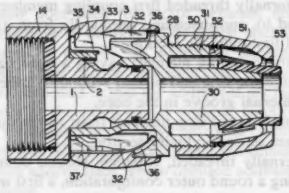
means establishing fluid communication through said coupling and said ends of the fluid pressure vessels after penetration of said fluid pressure vessel crimped and sealed ends by said piercing tool by axial movement of said fluid pressure vessel sealed ends toward each other.

4,219,222

RAPID COUPLING AND UNCOUPLING JOINT FOR FLEXIBLE PIPES

Giacomo Brusadin, Pordenone, Italy, assignor to Uniflex S.p.A., Montereale, Italy

Filed May 23, 1978, Ser. No. 908,635
Claims priority, application Italy, May 23, 1977, 82523 A/77
Int. Cl.² F16L *37/12*
U.S. Cl. 285—8 **8 Claims**



1. A rapid coupling and uncoupling joint for connecting and disconnecting flexible pipes, said joint comprising:

a male part having an outer surface with an annular groove therein;

a female part having an inner surface dimensioned to receive said male part, said female part having radially extending therethrough a plurality of holes;

a control ring comprising an annular element positioned externally of and surrounding said female part and displaceable axially only with respect thereto, said annular element having a first end facing toward said male part and a second end facing away from said male part, when said male part is inserted into said female part;

said annular element having integral with an inner surface thereof, at positions adjacent said first end, a plurality of flexible tangs including radially inwardly extending first portions and second portions extending axially from said first portions toward said second end;

said tangs having integral with free ends of said second portions thereof a plurality of locking elements positioned to extend through said holes in said female part and into said annular groove in said male part when said male part is inserted into said female part, to thereby lock said male part in said female part and to prevent relative axial displacement therebetween;

said annular element having integral with said inner surface thereof elastic member means positioned to elastically abut said female part when said male part is locked in said female part and to urge said annular element in a first axial direction toward said male part;

whereby manual axial movement of said annular element with respect to said female part, in a second axial direction opposite to said first axial direction, will cause flexing of said elastic member means and radial outward flexing of said tangs to allow radial outward movement of said locking elements from said annular groove, thus unlocking said male part and allowing withdrawal thereof from said female part; and

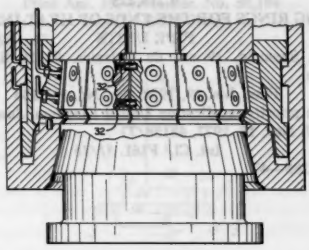
said annular element, said tangs, said locking elements and said elastic member means being formed as a single integral piece of molded plastic material.

4,219,223

UNDERWATER MULTIPLE HYDRAULIC LINE CONNECTOR

Clarence A. Schulte, Crosby, Tex., assignor to Vetco Inc., Ventura, Calif.

Filed Nov. 9, 1978, Ser. No. 959,270
Int. Cl.² F16L *35/00*
U.S. Cl. 285—26 **6 Claims**



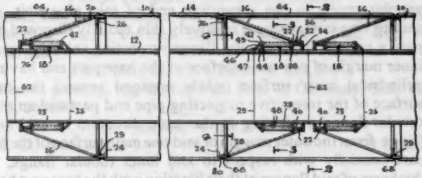
1. A hydraulic control pod connector comprising: a generally cylindrical hub, having means for attaching permanent hub hydraulic connections, and a plurality of radially directed hub openings in fluid communication with said means for attaching the permanent hub hydraulic connections; a generally cylindrical body, having means for attaching permanent body hydraulic connections, and body openings in fluid communication therewith; a plurality of dogs annularly arranged and radially movable within said body, said dogs having dog openings therethrough alignable and sealable with corresponding radially directed hub openings; flexible tubes connected to said body and each of said dogs in fluid communication between said body openings and said dog openings; a cam means for moving said dogs radially into engagement with said hub; and drive means for moving said cam into and out of engagement with said dogs.

4,219,224

CRYOGENIC PIPELINE SYSTEM

Bernard C. Hanley, Chestnut Hill, Mass., assignor to Foundation Cryogenic Joint Venture, Toronto, Canada

Filed Apr. 6, 1978, Ser. No. 893,981
Int. Cl.² F16L *9/18, 59/14*
U.S. Cl. 285—47 **32 Claims**



1. A pipeline system having reduced thermal strain when subjected to low temperatures, comprising a first inner pipe means, a second outer pipe means disposed concentrically about said inner pipe means, and providing an annular space between said inner pipe means and said outer pipe means, a plurality of connector cones disposed in said annular space, each of said cones being connected at one end portion to said outer pipe means, and a plastic axially extending insulating member in the annular space around the inner pipe means and connected at one end to the other end portion of said connector cones and positioned between said other end portion of said connector cones and said inner pipe means, and means con-

necting the other end of said insulating member to said inner pipe means, said insulating member being mounted in spaced relation to said inner pipe means and having a high coefficient of thermal contraction, high compressive strength, and a high modulus of elasticity.

4,219,225

SEALING RINGS FOR THE ENDS OF HEAT-INSULATED PIPE UNITS

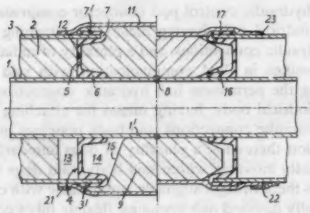
Fantisek Sigmund, 19 rue du Calvaire, 92210 Saint-Cloud, France

Filed Jun. 19, 1978, Ser. No. 917,134

Claims priority, application United Kingdom, Jun. 23, 1977, 26452/77; Nov. 18, 1977, 48158/77

Int. Cl.² F16L *51/16*

U.S. Cl. 285—47 **17 Claims**



5. In a heat-insulated pipe unit of the kind which comprises a pipe, at least one layer of heat-insulating foam material surrounding said pipe over the greater part of the length of said pipe and an outer jacket of fluid-impervious protective material, the end parts of the pipe projecting beyond the corresponding ends of the foam material and the ends of the jacket projecting likewise but for a shorter distance, so that annular recesses are provided in the ends of the pipe unit, the improvement composed by said pipe unit having at least one end thereof sealed by an elastomeric sealing ring of generally U-shaped cross-section located at least partly within the annular recess in the respective end of said pipe unit, said sealing ring comprising a relatively thin radially disposed base part, a radially inner tubular flange projecting axially from the inner margin of one main surface of the base part and having a cylindrical inner surface tightly engaged around the outer surface of the respective projecting pipe end part and an outer tubular flange projecting in the same direction as said inner flange from the outer margin of said one main surface of the base part coaxially with respect to said inner tubular flange, the thickness of said flanges at their junction with the base part being greater than the thickness of said base part, said base part and said outer tubular flange being formed with a parallel-sided annular groove extending axially from the other main surface of said base part for a substantial distance into the interior of the outer tubular flange so that said outer tubular flange has an inner portion extending inside said annular groove in the direction away from said base part and integrally connected, at that end of the outer tubular flange which is remote from said base part, with an outer portion extending outside said annular groove in the direction towards said base part, said outer portion being tightly engaged and around the outer surface of the respective projecting jacket end part of said pipe unit.

4,219,226

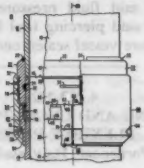
CYLINDER JOINT

George A. Kappenhagen, Monroe Township, Monroe County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 27, 1978, Ser. No. 928,636

Int. Cl.² F16L *25/00*

U.S. Cl. 285—354 **3 Claims**



1. A cylinder joint for a hydraulic cylinder suitable for use in a hydraulic elevator, comprising:

first and second cylinder sections having first unthreaded ends to be coupled,

an externally threaded first coupling member non-rotatably fixed to, and extending outwardly from, the first end of said first cylinder section,

said first coupling member having a bore sized to slidably receive the first end of said second cylinder section, and an internal groove in the bore,

a circumferential stop member fixed to the outer periphery of said second cylinder section,

an internally threaded, rotatable second coupling member having a round outer configuration, a first internal diameter larger than the diameter of said circumferential stop, and a second internal diameter larger than the first, with the first and second internal diameters defining a shoulder therebetween, said second coupling member being telescoped over the first end of said second cylinder section and said circumferential stop member,

a split ring assembled about said second cylinder section with gaps between adjoining ends thereof, said split ring being constructed to cooperate with said circumferential stop member to limit movement of the second coupling member towards the first end of said second cylinder section,

said split ring having a substantially Z-shaped cross-sectional configuration, taken through a vertically oriented plane, including first and second internal diameters sized to snugly surround said circumferential stop member and said second cylinder section, respectively, said first and second internal diameters defining an internal shoulder which contacts the circumferential stop member, and further including first and second external diameters sized to snugly cooperate with the first and second internal diameters, respectively, of said second coupling member, said first and second external diameters defining an external shoulder,

said first and second cylinder sections being coaxially disposed in a vertical orientation with their first ends facing and contacting one another, such that the weight of the upper cylinder section is supported by the lower cylinder section, with the first and second coupling members being threadably engaged to maintain the first and second cylinder sections in assembled relation, with no weight on the threads of the first and second coupling members, and with the internal shoulder of second coupling member contacting the external shoulder of said split ring,

and a sealing ring disposed in the internal groove in the bore of the first coupling member, said sealing ring providing a fluid seal between the second cylinder section and the first coupling member, without regard to whether or not the first and second coupling members are threadably engaged.

4,219,227
LOCKABLE DOOR LOCK FOR MOTOR VEHICLES

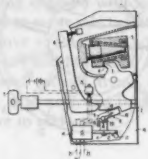
Christian Grabner, Gechingen; Rolf Krügener, Sindelfingen; Dieter Feichtiger, Aidlingen; Rüdiger Hoffmann, and Hermann W. Kurth, both of Sindelfingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 1, 1979, Ser. No. 8,250

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1978, 2804613

Int. Cl.[2] E05C 3/26

U.S. Cl. 292—216 12 Claims



1. A latchable door lock for motor vehicles, comprising catch means operable to be blocked by a first latching means actuatable manually and by an additional latching means whose blocking effect can be cancelled only by means of a fitting key, characterized in that the additional latching means engages directly at the catch means without reaction on the first latching means, and in that key-controlled commands are transmitted by way of lines to servo means coordinated to the remaining doors and/or flaps which displace additional latching means thereof.

4,219,228
CONTAINER-HANDLING SPREADER BEAM OR THE LIKE

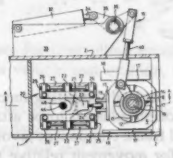
Frederick L. Duckett, Bath, England, assignor to Stothert & Pitt Limited, Bath, England

Filed Feb. 15, 1979, Ser. No. 12,357

Claims priority, application United Kingdom, Feb. 17, 1978, 6407/78

Int. Cl.[2] B66C 1/22

U.S. Cl. 294—81 SF 17 Claims



1. A container-handling spreader beam or the like having a pair of twistlock assemblies at each of two ends thereof, each pair of said twistlock assemblies being positioned to co-act with the transversely positioned corner castings of an I.S.O. or "Sealand" type container, wherein each of said twistlock assemblies comprises a bearing bush supported in a frame of the beam for limited transverse movement, an elongated twistlock shaft turnably mounted in said bearing bush and having a head shaped to engage with the top aperture of one of said corner castings, means for turning the said shaft in said bush about its longitudinal axis, and means for resiliently holding each said twistlock assembly in a predetermined position relative to said frame, said means including a yoke member one end of which is attached to said bearing bush and the other end of which is formed with transversely disposed means co-acting with oppositely acting resilient means supported on and attached to said frame, the predetermined positions of said twistlocks of each said pair being such that the centre-to-centre spacing of said pair of twistlocks corresponds to the mean centre-to-centre spacing of said top apertures of said transverse corner castings of said I.S.O. container and said "Sealand" container.

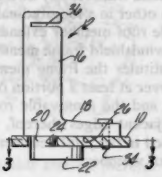
4,219,229
REMOVABLE STANCHION FOR CARGO BRACING PURPOSES

Benjamin Ciocan, Warren, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 16, 1979, Ser. No. 30,184

Int. Cl.[3] B60P 7/06

U.S. Cl. 296—43 2 Claims



1. In a vehicle having a bed for receiving cargo thereon: improved means for minimizing lateral shift of the cargo along the bed upper surface; said shift-minimizing means comprising a number of stanchions removably mounted on the bed to extend closely adjacent side surfaces of cargo components; said bed having a series of slots therethrough; each slot having a major axis and a minor axis; each stanchion comprising a post, a foot extending laterally from the post for a significantly greater distance than the minor dimension of the slot, a pin projecting downwardly from the post, and a finger projecting laterally from the pin in spaced relation to the foot; each finger having a plan outline mated to the configuration of the slot whereby the post can be manipulated to cause the pin and finger to penetrate the slot, whereupon the finger takes a position below the plane of the bed and the pin takes a position within the slot; the aforementioned foot having a flat lower face adapted to abut against the bed upper surface when the pin is within the slot; the stanchion being rotatably adjustable about the axis of the post so that the finger can take a locking position generally at right angles to the slot; the axial dimension of the pin corresponding to the thickness of the bed, whereby the finger and foot forcibly engage opposite surfaces of the bed, thereby stabilizing the stanchion in an upright condition projecting upwardly from the bed upper surface.

4,219,230
VEHICLE BODY CONSTRUCTION

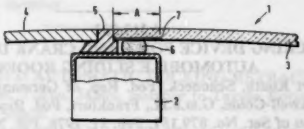
Anatole Lapine, Döffingen, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 12, 1977, Ser. No. 859,706

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1976, 2655990

Int. Cl.[2] B60J 9/02

U.S. Cl. 296—216 9 Claims



1. A vehicle body construction which includes at least one vehicle body frame member and at least one fixed pane of glass, characterized in that the at least one pane of glass is arranged so as to extend over the at least one body frame member and cover at least a portion of an outside surface thereof, and in that frameless means are provided for attaching the at least one

pane of glass to the frame member, said frameless means attaching said pane of glass in association with neighboring body parts with no elements projecting exteriorly therefrom, wherein the neighboring body parts include one of a stationary roof member and a removable roof member, the at least one pane of glass is attached to the frame member so as to be disposed in the same plane with the roof member, and said means for attaching the at least one pane of glass includes an adhesive member interposed between an inside surface of the pane of glass and an outside surface of the frame member, characterized in that the vehicle body construction further includes a roll bar member and a windshield frame member, both of which extend transversely of the vehicle body and are spaced from each other in a longitudinal direction of the vehicle, the removable roof member extends between the roll bar member and the windshield frame member, and in that the roll bar member constitutes the frame member with the pane of glass projecting over at least a portion of the roll bar member, the pane of glass and the removable roof member defining a joint between adjacent edges thereof, and in that a sealing member is provided in the joint between the pane of glass and the removable roof member.

4,219,231

VEHICLE ROOF WITH ROOF OPENING CLOSABLE BY A COVER

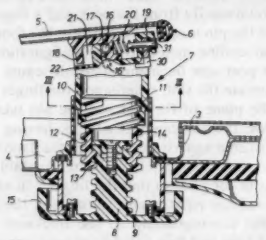
Richard Igel, Germering, Fed. Rep. of Germany, assignor to Webasto-Werk W. Baier GmbH & Co., Fed. Rep. of Germany

Filed Aug. 14, 1978, Ser. No. 933,542

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1977, 2736459

Int. Cl.² B60J 7/08

U.S. Cl. 296—218 **12 Claims**



1. In a vehicle body member with an opening, a tiltable and removable cover for closing said opening, said cover being swivelable in the vicinity of a front edge about an axis running at right angles to the lengthwise axis of the cover, a tilting mechanism near the rear edge for tilting said cover about said axis, said tilting mechanism being mounted on the vehicle body member and connected with the cover by a locking arrangement, the improvement comprising said locking arrangement including first locking elements so disposed and designed that they are releasable only from inside the vehicle, even when said cover is tilted, and second locking elements releasable only from outside vehicle when the cover is tilted.

4,219,232

BLOCKING DEVICE FOR HAND CRANK DRIVES ON AUTOMOBILE SLIDING ROOFS

Herbert Kouth, Schoneck, Fed. Rep. of Germany, assignor to Rockwell-Golde, G.m.b.H., Frankfurt, Fed. Rep. of Germany

Division of Ser. No. 879,151, Feb. 21, 1978, Pat. No. 4,155,589. This application Dec. 4, 1978, Ser. No. 966,176

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1977, 2707393

Int. Cl.² B60T 7/08

U.S. Cl. 296—223 **1 Claim**

1. A blocking device for hand crank drives on automobile sliding roofs comprising: a crank arm, carrying at its end a crank knob and pivotally attached to a rotatable hub plate fixed to the crank pedestal and capable of being folded in over said crank pedestal into a seating slit of said hub plate and locking in a spring-like manner in its two limiting positions, said crank knob of said crank arm, when said crank arm is in its folded-in position, being situated in a depression of a dish, which is non-rotatably fixed concentrically to the crankshaft and surrounds said hub plate, having a plurality of depressions dis-

posed at uniform intervals around the circumference of said dish, the walls of said depressions being oriented approximately perpendicularly to the cranking plane, wherein a plurality of ribs or the like are disposed in said dish at uniform angular intervals and radially to said crankshaft and approximately perpendicularly to said cranking plane, each two adjacent ribs receiving and seating therebetween said crank knob when said crank arm is folded in.

4,219,233

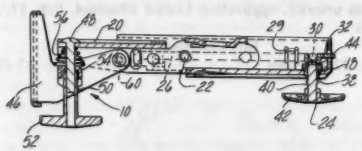
CHAIR SEAT BACK TILT-ADJUSTING MECHANISM

William C. Rodgers, Stamping Ground, Ky., assignor to Hoover Universal, Inc., Saline, Mich.

Filed Oct. 10, 1978, Ser. No. 949,686

Int. Cl.² A47C 3/00

U.S. Cl. 297—300 **2 Claims**



1. A chair seat back tilt-adjusting mechanism comprising a first frame component adapted to be attached to a chair seat member, a second frame component pivotally mounted on said first component for movement relative thereto about a horizontal axis, at least one torsion bar having a body portion and end portions bent transversely thereof, one of said end portions being secured to said second component and the other of said end portions being secured to said first component so that relative pivotal movement of said components causes said torsion bar body portion to twist between said end portions and thereby yieldably resist said relative pivotal movement, a torsion bar adjustment member mounted on said first component and engageable with one of said torsion bar end portions so as to be operable to exert a force on said end portion capable of preloading said torsion bar to thereby adjust the magnitude of resistance applied by said torsion bar to said relative pivotal movement, a third frame component pivotally mounted directly on said second component for movement relative thereto about a horizontal axis and adapted to support a chair seat back, said third frame component being pivotally mounted on said second frame component at a position spaced rearwardly from the position where said second component is pivotally connected to said first component, and adjustable means engaging said third component secured to said second component so as to be operable to move said third component

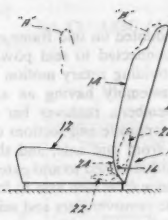
about said axis to an adjusted position, said adjustable means comprising coacting nut and bolt means secured to said second frame component and to said third frame component at a position thereon displaced radially from said horizontal axis so that operation of said assembly results in pivoting of said third frame component about said axis, said nut and bolt means including a bolt secured to said second frame component, a nut threadably mounted on said bolt, and a bracket assembly fixedly secured to said third frame component and positioned on said bolt for longitudinal movement relative thereto, said bracket assembly being engaged with said nut so that turning of said nut is operable to move said bracket assembly upwardly or downwardly relative to said bolt and thus pivot said third frame component about said horizontal axis, and spring means disposed between said second frame component and said bracket assembly so as to urge said third frame component in one direction relative to said axis.

4,219,234

RECLINING AND EMERGENCY LATCH MECHANISM FOR VEHICLE SEATS

Robert L. Bell, Oxford, Mich., assignor to Fisher Corporation, Troy, Mich.

Filed Sep. 28, 1978, Ser. No. 946,510
Int. Cl.[2] A47C *1/027*
U.S. Cl. 297—374 **2 Claims**



1. A latch mechanism for controlling rotation of a vehicle seat back relative to a vehicle seat cushion, said mechanism comprising

a seat cushion bracket on said seat cushion, said bracket having a planar surface,

a seat back bracket on said seat back,

a pivot pin joining said seat cushion bracket and seat back bracket for relative rotation,

a disc like clutch quadrant having first and second parallel flat faces supported by said pivot pin for rotation relative to both said seat cushion and seat back, the first face of said clutch quadrant being in juxtaposed relation to the planar surface of said seat cushion bracket,

a latch dog pin supported by said seat cushion bracket on the opposite side of said clutch from the planar surface on said seat cushion bracket, the central axis of said latch pin extending at a right angle and intersecting the axis of said pivot pin, said latch pin being spaced from the planer surface of said seat cushion bracket,

a pair of latch dogs supported for rotation by said latch dog pin having biting edges engageable with the second face of said clutch, and

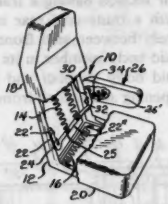
spring means normally biasing said dogs into engagement with said quadrant and said quadrant into engagement with the planer surface on said seat cushion bracket to preclude rotation of said clutch relative to said seat cushion bracket in either direction about said pivot pin.

4,219,235

INSERTABLE ARMREST FOR A VEHICLE SEAT

Dennis H. Heling, Milwaukee, Wis., assignor to UOP Inc., Des Plaines, Ill.

Filed Dec. 26, 1978, Ser. No. 973,198
Int. Cl.[2] A47C *7/54*
U.S. Cl. 297—417 **13 Claims**



1. A seat and an insertable armrest therefor comprising a seat back frame; armrest mounting means carried by said seat back frame on at least one side thereof; a seat back cushion mounted on said seat back frame and having a side portion overlying and concealing said armrest mounting means; an elongated, generally horizontal pivot axle member having an inner end portion which is adapted to be firmly engaged and retained by said armrest mounting means after a first access opening has been made in said side portion of said back cushion; an armrest frame member having an elongated flat top wall surface and at least one generally vertical side wall surface integrally formed therewith, bearing means integrally formed in said frame member including at least inner and outer axially aligned bearing portions which are engaged with complementary bearing portions on said pivot axle member, said inner and outer bearing portions being spaced apart by a distance greater than the width of said top wall surface at its closest location to said bearing portions and at least one of said bearing portions being supported by integral rib means at a location axially displaced from any axially transverse vertical plane that includes said top wall surface; a stop portion on said pivot axle member for engaging and limiting the movement of said armrest frame member along the axis of said pivot axle member toward said seat back frame; an elongated stop member parallel to and spaced from said pivot axle member and having an inner end portion which is adapted to be firmly engaged and retained by said armrest mounting means after a second access opening has been made in said side portion of said back cushion; a stop portion formed on the peripheral side surface of said stop member engageable with rotation limiting stop means on said armrest frame member, a retaining element carried by said stop member, said retaining element being positioned generally under the top wall surface of said armrest frame member and bearing against a generally vertically positioned flat rim surface defining one edge of a curved slot integrally formed in said armrest frame member so as to deform said flat rim surface and resiliently force said armrest frame member toward said seat back cushion and into contact with said stop portion on said pivot axle member.

4,219,236

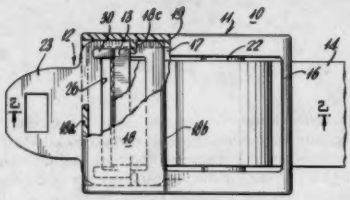
BELT CARRIED AUTOMATIC LOCKING RETRACTOR

Juichiro Takada, Tokyo, Japan, assignor to Takata Kojyo Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 852,121, Nov. 16, 1977, Pat. No. 4,152,026. This application Mar. 30, 1979, Ser. No. 25,626
Claims priority, application Japan, Dec. 13, 1976, 51-165906[U]
Int. Cl.[3] A62B *35/00*; B65H *75/48*
U.S. Cl. 297—476 **10 Claims**

1. An automatic locking belt carried belt retractor comprising a body member including a rear portion and a front portion having transversely space parallel side walls projecting longi-

tudinally forwardly from said rear portion, a belt take-up reel mounted to said body member rear portion and rotatable in opposite belt extraction and belt retraction directions and spring biased to rotate in a belt retraction direction, a coupling member extending between and movably supported by said body member front portion side walls and restricted to move in a linear longitudinal direction relative to said body member and including a rear section having a transversely extending opening therein with a transverse rear edge, a locking bar extending transversely between said front portion side walls and restricted by said body member in its longitudinal movement relative to said body member and being in overlying registry with said opening and spaced from between said front



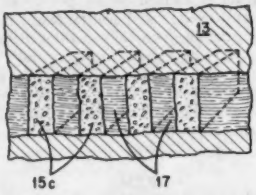
and rear edges whereby to be longitudinally movable relative to said opening rear edge, and a belt secured to and partly wound on said reel and extending forwardly and below said reel and then upwardly through said opening rearward of said locking bar, forwardly about said locking bar, downwardly through said opening forward of said locking bar and thence rearwardly to a belt anchor point whereby a pull on said coupling member to move said coupling member forwardly relative to said body member effects the contraction between said locking bar and said rear edge to clamp said belt therebetween and release of said coupling member permits the separation of said locking bar and rear edge and the movement of said belt therebetween.

4,219,237

METHOD FOR MAXIMIZING SHALE OIL RECOVERY FROM AN UNDERGROUND FORMATION

Clyde J. Sisemore, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 30, 1977, Ser. No. 838,274
Int. Cl.[2] E21C *41/10, 43/00*
U.S. Cl. 299—2 **5 Claims**



1. A method for maximizing shale oil recovery from an underground formation which has previously been processed by in situ retorting such that there is provided in the formation a column of substantially intact oil shale intervening between adjacent spent retorts, which method comprises:

providing an aqueous slurry of burned spent shale;

substantially filling the spent retorts with said aqueous slurry;

permitting said aqueous slurry to harden into a cement-like substance, thereby stabilizing the spent retorts;

developing the intervening column of substantially intact oil shale for in situ retorting; and

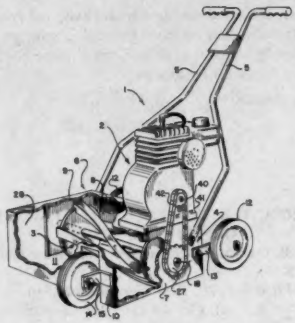
recovering shale oil from said developed intervening column by in situ retorting, the stabilized spent retorts providing support therefor.

4,219,238

COMPOSITION ROOF SHINGLE REMOVER

Edward J. Sanchez, 727 Richland Ave., Baton Rouge, La. 70806

Filed Oct. 23, 1978, Ser. No. 953,411
Int. Cl.[2] E04D *15/00*
U.S. Cl. 299—39 **8 Claims**



1. A power driven device for removing roof shingles from a roof which comprises:

(a) a frame assembly;

(b) a power source mounted on said frame assembly; and

(c) a reel assembly connected to said power source by a drive means for providing rotary motion to said reel assembly, said reel assembly having an axle with drive means engaging members, remover bar support plates fixedly mounted on opposite end sections of said axle and extending outward from said axle, and shingle remover bars spaced apart and attached to and extending between said plates at a distance from said axle to form an opening between said shingle remover bars and said axle for said roof shingles to pass through, said remover bars protruding past said plates a sufficient distance to contact said shingles at an angle in direction of said plate's rotary motion.

4,219,239

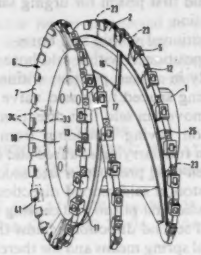
MINING AUGER

Norbert B. Weikert, Dortmund; Hans Tekathen, Dinslaken, and Heinrich Schulte, Hattingen, all of Fed. Rep. of Germany, assignors to Krampe & Co., Hattingen, Fed. Rep. of Germany

Filed Oct. 30, 1978, Ser. No. 955,630
Int. Cl.[2] E21B *35/22*
U.S. Cl. 299—81 **34 Claims**

4. In a mining auger having a hollow auger shaft terminating in a front end, an auger helix welded to the outer face of the shaft and having a peripheral edge zone radially spaced from the shaft surface and extending helically thereabout; a plurality of spaced tool holders arranged in the peripheral edge zone of the helix for receiving cutting tool bits; separate spray nozzles arranged in the peripheral edge zone and associated with each cutting tool bit; a liquid supply channel provided in the shaft; a distributor channel communicating with the supply channel and following the helical course of the helix; and connecting channels leading to individual spray nozzles and communicating with the distributor channel; the improvement comprising a bridging channel extending radially away from the outer surface of said auger shaft and being located externally of outer wall faces of said helix; said bridging channel being formed of a duct member of U-shaped cross section attached liquidtight

along its free edges to an external wall face of said helix; whereby said bridging channel has a passage of rectangular cross section bounded on three sides by inner wall faces of said



duct member and on one side by said external wall face of said helix; said bridging channel connecting said supply channel with said distributor channel.

4,219,240

WHEEL FOR ROLLER SKATES OR THE LIKE

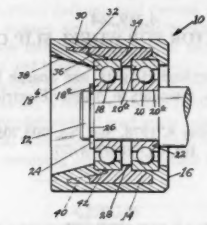
Manfred Brandenstein, Aschfeld; Armin Olschewski, Schweinfurt; Sigismund Finzel, Dittelbrunn; Willi Gössmann, Niederwerrn, and Josef Stark, Hambach, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Apr. 26, 1978, Ser. No. 900,258

Claims priority, application Fed. Rep. of Germany, May 28, 1977, 7717024[U]

Int. Cl.³ A63C *17/22*

U.S. Cl. 301—5.7 **6 Claims**



1. A wheel construction comprising a bearing and a mantle circumscribing the bearing made of a given material, and a reinforcing ring of a material harder than the mantle which is embedded therein, said ring having a circumferentially extending flexible protruding section extending beyond at least one axial end face of the bearing at one side of the wheel, said protruding section of said reinforcing ring being provided with a plurality of circumferentially spaced radial through slits.

4,219,241

VENTILATING ORNAMENTAL WHEEL COVER FOR SOLID WHEELS

Alf Müller, Waiblingen-Bittenfeld, and Bernd Löper, Korb, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

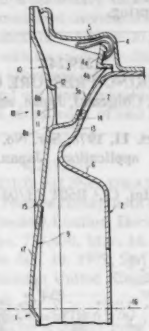
Filed Oct. 17, 1978, Ser. No. 952,047

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1977, 2750424

Int. Cl.² B60B *7/02, 19/10*

U.S. Cl. 301—6 CS **14 Claims**

1. A wheel cover for vehicle wheels having a wheel pan provided with air suction openings and a radially extending outer wheel flange, the wheel cover including a cover plate which terminates in an area of the wheel flange and which defines with the wheel flange an air outlet opening, and a plurality of ventilator fins disposed on a backside of the cover plate facing the vehicle wheel, characterized in that at least one additional air suction opening is provided in the cover plate at



a radially inner zone of the ventilator fins, and in that radially outer ends of the ventilator fins terminate at an outer peripheral edge of the cover plate, said at least one additional air suction opening dividing the cover plate into a radially inner part and a radially outer part, said radially inner and outer parts being connected only by the ventilator fins.

4,219,242

BRAKING CORRECTION DEVICE

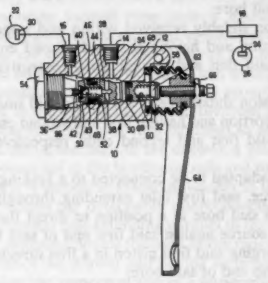
Jean J. Carre, Montreuil, France, assignor to Societe Anonyme D.B.A., Paris, France

Filed Mar. 3, 1978, Ser. No. 883,099

Claims priority, application France, Mar. 11, 1977, 77 07361

Int. Cl.² B60T *8/26*

U.S. Cl. 303—6 C **1 Claim**



1. In a braking correction device, the combination of a housing having an inlet, an outlet, and a bore communicating with the inlet and the outlet, a differential piston sealingly engageable with a wall of the bore to substantially define a first chamber and a second chamber, the first chamber communicating with the inlet and the second chamber communicating with the outlet, a passage within the differential piston communicating the first chamber with the second chamber, a valve member disposed within the passage and cooperating with the differential piston to open and close the passage in response to movement of the differential piston within the bore, return means acting against the differential piston to bias the latter to an idle position wherein the valve member opens the passage, the piston defining a blind axial bore, the return means including a movable member movably disposed within the blind axial bore and a lever pivoted on the housing, the movable member being

biased by a spring within the blind axial bore against the lever, said spring having a substantially constant operating force to apply the same force to the differential piston and movable member throughout the pivotal movement of the lever and the movement of the differential piston, and said movable member defining a stop engageable with the differential piston to limit contraction of said spring.

4,219,243

HYDRAULIC BRAKING PRESSURE CONTROL VALVE

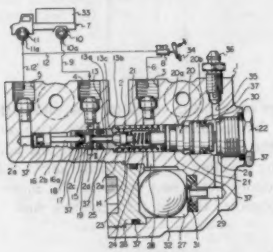
Yoshihiro Hayashida, Chigasaki, Japan, assignor to Tokico Ltd., Kanagawa, Japan

Filed Oct. 11, 1978, Ser. No. 950,526

Claims priority, application Japan, Oct. 20, 1977, 52/140824[U]

Int. Cl.[2] B60T *13/06*

U.S. Cl. 303—6 C **5 Claims**



1. A hydraulic braking pressure control valve for a vehicle, said control valve comprising:

a main body having therein an elongated bore having first and second opposite ends, said bore including at least a relatively larger diameter bore portion at a position between said first and second ends of said bore and a relatively smaller diameter bore portion adjacent said second end of said bore;

a first piston slidably received within said larger diameter bore portion and having first and second ends directed toward said first and second ends, respectively, of said bore;

a second piston slidably received within said smaller diameter bore portion and having first and second ends directed toward said first and second ends, respectively, of said bore;

a first inlet adapted to be connected to a braking fluid pressure source, said first inlet extending through said main body into said bore at a position to direct fluid pressure from the source against said first end of said first piston, thereby urging said first piston in a first direction toward said second end of said bore;

an outlet adapted to be connected to a first braking pressure circuit, said outlet extending through said main body from said bore at a position between said first and second pistons;

a second inlet adapted to be connected to the braking fluid pressure source and to a second braking pressure circuit separate from said first braking pressure circuit, said second inlet extending through said main body into said second end of said bore at a position to direct fluid pressure from the source against said second end of said second piston, thereby urging said second piston in a second direction toward said first end of said bore;

said first piston having extending therethrough a fluid passage normally connecting said first inlet and said outlet, said fluid passage including a first end defining a valve seat and a second end opening in said second end of said first piston;

a plunger slidably received within said bore at a position between said first end of said bore and said first piston, said plunger having a first end facing said first end of said bore and a second end facing said first piston;

pressure control spring means positioned between said plunger and said first piston for urging said first piston in said first direction;

a valve body positioned within said bore;

retaining means positioned within said bore for maintaining said valve body in a fixed position within said bore, said valve body being spaced from said valve seat when said first piston is moved in said first direction;

said second piston having extending from said first end thereof a piston rod carrying at a free end thereof pushing means for, when fluid pressure in said second inlet moves said second piston in said second direction, abutting said second end of said first piston and causing said first piston to move in said second direction against the force of said pressure control spring means and for thereby causing said valve seat to contact said valve body, thus closing said fluid passage and isolating said first inlet from said outlet;

said pushing means including a generally cylindrical portion having therein a plurality of slots extending axially of said bore;

said retaining means including a plurality of members freely received within said slots, thereby enabling relative axial movement of said pushing means with respect to said retaining means;

passage means for communicating a selected fluid pressure from one of said first inlet, said outlet and said second inlet to said first end of said plunger and for thereby adjusting the biasing force of said pressure control spring means as a function of the level of said selected fluid pressure; and

inertia valve means for closing said passage means and interrupting the communication of said selected fluid pressure to said first end of said plunger upon a predetermined deceleration of the vehicle upon braking thereof.

4,219,244

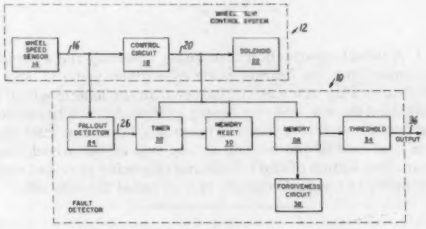
FAULT DETECTOR FOR WHEEL SLIP CONTROL SYSTEM

Paul K. Griner, Maryland Heights, and Joseph E. Fleagle, St. Louis, both of Mo., assignors to Wagner Electric Corporation, St. Louis, Mo.

Filed May 8, 1978, Ser. No. 903,705

Int. Cl.[2] B60T *8/00*

U.S. Cl. 303—92 **21 Claims**



1. A fault detector for a wheel slip control system, said wheel slip control system having at least one wheel speed sensor whose output is connected to a control circuit and a solenoid valve selectively energizeable by control signals from said control circuit under predetermined conditions, comprising:

(a) memory means connected to said control signals for storing successive increments of signal during successive solenoid valve energizations;

(b) output means for generating an output when the memory means attains a predetermined condition;

(c) reset means actuated by the end of said control signals for

erasing at least some of the signal stored in said memory means;

(d) timer means for inhibiting said reset means until a predetermined time after the beginning of each of said control signals; and

(e) fallout detector means connected to said at least one wheel speed sensor and generating a fallout signal for lengthening said predetermined time when the signal from said at least one wheel speed sensor exhibits sensor fallout.

4,219,245

SPHERICAL BEARING RETAINER

John G. Lewis, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Apr. 11, 1979, Ser. No. 28,969

Int. Cl.³ F16C *23/04, 25/04*

U.S. Cl. 308—29 **5 Claims**

5. A twist lock retainer for a spherical bearing member adapted to be installed within a hub in a bearing support member for retaining said spherical bearing member in a desired position within said hub, said retainer being a one-piece unitary member formed of sheet spring steel or the like and having a main body portion with a central opening therein, a portion of said main body portion defining said central opening being so structured as to engage said spherical bearing member, said main body portion having a plurality of tabs extending outwardly therefrom and being engageable with said hub, each of said tabs being twisted in the same direction about a respective axis which is generally a radius of said central opening so as to be disposed at a predetermined lead angle relative to said main body portion, said tabs constituting means for self-threading the retainer into retaining relation with said bearing member.

4,219,246

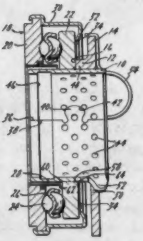
STAKED FLANGE CLUTCH RELEASE BEARING ASSEMBLY

Eli M. Ladin, Ann Arbor, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.

Filed May 14, 1979, Ser. No. 39,089

Int. Cl.³ F16C *19/10*

U.S. Cl. 308—219 **13 Claims**



1. A clutch release bearing assembly comprising a tubular bearing carrier, an annular collar disposed in frictional engagement around one end portion of said carrier and terminating in an annular radial edge and formed with a radially extending flange axially spaced from said edge, interlocking means on said collar and said carrier for preventing relative rotation therebetween and outward axial movement of said collar along said one end portion, a bearing supported by said carrier including a rotatable race, a stationary race and a plurality of antifriction elements constrained therebetween, said stationary race having an inner radial face and an axially spaced outer radial face and formed with an axial bore disposed in frictional engagement around the other end portion of said carrier, said stationary race positioned with said inner face in axial abutting relationship against said radial edge of said collar.

4,219,247

SUSPENDED FILING DRAWER

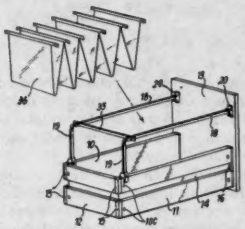
Leon G. Litchfield, and Terence Hardy, both of Belper, England, assignors to L. B. (Plastics) Limited, Derbyshire, England

Continuation of Ser. No. 777,430, Mar. 14, 1977, abandoned. This application Jan. 18, 1979, Ser. No. 4,592

Claims priority, application United Kingdom, Apr. 10, 1976, 14739/76

Int. Cl.² A47B *63/00*

U.S. Cl. 312—184 **6 Claims**



1. A suspended filing drawer having a relatively low back and sides forming a low section and a relatively high front, the back and sides being formed from hollow extruded panels having their ends open, means received in the open ends for so interconnecting the back, sides and front of the drawer that said back, sides and front may be stored and transported in a disassembled condition, and a file supporting assembly detachably connected to the low section and to the front and including a pair of spaced horizontal rails mounted so as to extend parallel to and above the sides of the drawer, a pair of spaced vertical bars connected to the horizontal rails and supported on the rear of said low section to extend upwardly to the horizontal rails, a horizontal bar detachably interconnecting the rear ends of the horizontal rails extending parallel to the back of the drawer, a first fastening device for each of the rails fixed to the rear of the front of the drawer and having an upwardly opening slot receiving the respective end of a horizontal rail, and a second fastening device for each of the vertical bars carried by said rear of the low section and having an upwardly opening slot for receiving the respective end of a vertical bar, whereby the file supporting assembly is bodily removable from the drawer.

4,219,248

PIECES OF FURNITURE HAVING SWIVEL MOUNTED SETTING UNITS

Adolphe Goldberg, 12, rue Mirabeau, 94300 Vincennes, France

Filed Aug. 22, 1978, Ser. No. 936,092

Claims priority, application France, Oct. 7, 1977, 77 30278

Int. Cl.² A47B *88/00*; A47F *7/08*

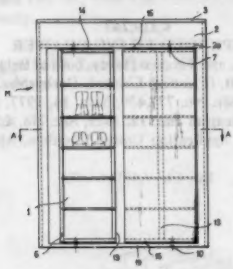
U.S. Cl. 312—324 **2 Claims**

1. A piece of furniture provided with at least one shelf for storage of goods, such as shoes, said piece of furniture comprising:

a furniture frame;

at least one storage unit comprising a vertical panel, a vertical member spaced from said panel and an upper tray and a lower tray both secured at right angles to said vertical panel and said vertical member, said vertical panel forming at least a part of a door of said furniture frame;

means for pivotally mounting said storage unit between bottom and top wall portions of said furniture frame, said mounting means including swivel means spaced from a vertically-extending axis passing through the center of the storage unit, said storage unit eccentrically pivoting about said swivel means;



said trays having irregularly curved peripheral edges formed from at least two arcs having different radii so that the portion of the door formed by the vertical panel moves without contacting said furniture frame during pivotal movement of said storage unit; and

abutting means provided on a rear vertical portion of said furniture frame in such manner that a portion of at least one irregularly curved peripheral edge of one of said trays abuts there against to locate said vertical panel in a predetermined position.

4,219,249

ULTRASONIC WELDING PROCESS FOR AUTOMOBILE ALTERNATOR SLIP RINGS

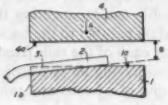
Claude Teytaud, Angers, France, assignor to Motorola, Inc., Schaumburg, Ill.

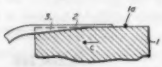
Filed Aug. 23, 1978, Ser. No. 936,284

Claims priority, application France, Aug. 26, 1977, 77 26121

Int. Cl.[3] H01R *39/08;* B23K *19/04*

U.S. Cl. 339—5 R **10 Claims**





1. An ultrasonic welding process for bonding a portion of a metallic wire having a longitudinal axis and a diameter to one exterior surface of a metallic piece to produce an electrical bonding of the metallic wire to the metallic piece, comprising the step of subjecting the piece and wire to the effect of an ultrasonic pressure coming from an electrode of an ultrasonic generator wherein a working surface of the electrode is kept pressed on the wire and in contact with the aforesaid exterior side under a defined pressure, the process characterized by the steps of, before applying the ultrasonic pressure, making on the exterior piece surface a gouging inclined with respect to the working surface of the electrode so that the gouging presents a variable depth channel to the electrode working surface, putting a portion of the wire to be welded in the gouging, and applying ultrasonic pressure from the electrode working surface to the portion of the wire inclined with respect to the electrode working surface and positioned in said gouging to produce a gradual axially tapered deformation of the wire while electrically bonding the wire to the metallic piece, whereby a strong bond less susceptible to tear stresses is provided between the wire and metallic piece.

5. An alternator slip ring assembly comprising a metallic alternator slip ring having a cylindrical part and a radial shoulder, the shoulder having an opening therein for a conductor wire, the opening reaching onto an exterior surface of the shoulder at the deepest extremity of a hollow gouging in the aforesaid exterior surface which is inclined with respect to the exterior shoulder surface so as to provide a variable depth channel with respect to said exterior shoulder surface, and a metallic wire having a longitudinal axis and diameter and a portion ultrasonically bonded in said gouging, said wire portion in said gouging having a gradual axially tapered deformation, whereby a strong bond less susceptible to tear stresses is provided between the wire and slip ring.

4,219,250

INTEGRATED CONTROL DEVICE

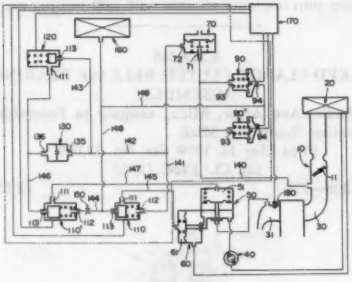
Masami Inada, Kariya; Shoji Ito, Nagoya; Kazauhiko Kitamura, Toyota, and Toshiro Harada, Okazaki, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Feb. 5, 1979, Ser. No. 9,651

Claims priority, application Japan, Feb. 6, 1978, 53/12145

Int. Cl.[3] H01R *4/64*

U.S. Cl. 339—15 **7 Claims**



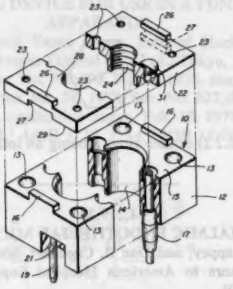
1. An integrated control device which comprises a plurality of exhaust gas control units each having port means; and base board means for removably mounting said control units thereon, said control units each having a side adapted to be engaged with said base board means for mounting each of the units thereon, said port means on each control unit being formed on said side, said base board means including fluid passage means formed therein, and said base board means having port opening means communicating with said fluid passage means and adapted to be mated with said port means in said control units for establishing necessary fluid communication among the control units.

4,219,251

POWER CONNECTOR

Edward L. Romine, Meriden, Conn., assignor to Litton Systems, Inc., Oakville, Conn.

Filed Dec. 8, 1978, Ser. No. 967,692
Int. Cl.³ H05K 1/08
U.S. Cl. 339—17 C 10 Claims



1. A power connector for use in coupling the terminal end of a power lead to the plated through holes of a printed circuit board, the power connector comprising:

a unitary, block-shaped plastic body having a first array of apertures therethrough extending from a first side to a second opposing side,

a conductive plate having a second array of apertures therein,

integrally formed interfitting engagement means on said first side of said plastic body and on said conductive plate for preventing relative rotational movement therebetween,

a plurality of pin contacts disposed one each in said first array of apertures, all of said pin contacts protruding on one end into said second array of apertures and all of said pin contacts protruding on the opposite end from said second side of said plastic body for mating with said plated through holes such that said second side of said plastic body is contiguous with the printed circuit board when mated therewith,

means electrically connecting said pin contacts to said conductive plate, and

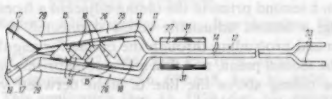
conductive fastening means for connecting said plate with said terminal end.

4,219,252

ELECTRIC PLUG CONNECTION

Karl Fischer, Am Gaensberg, 7519 Oberderdingen, Fed. Rep. of Germany

Filed Nov. 14, 1978, Ser. No. 960,674
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1977, 2752194
Int. Cl.² H01R 13/16
U.S. Cl. 339—259 R 13 Claims



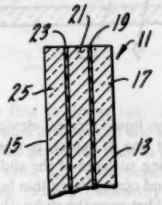
1. An electric plug connection, comprising: a jaw-type connecting member, having an opening into which a conductor can be inserted and clamped, the connecting member having two arms and comprising a connecting section and an adjacent conductor section, being formed from a single sheet metal blank which is bent together, lying doubled over in the connecting section; and, a hoop of sprung material, pushed over the connecting member and having two arms pressing the connector member arms together, and a back, the hoop being formed from a sprung sheet metal member which is bent together along the back, parallel to its arms, the back of the hoop being shaped to form an arched cross member, lying in a region of the connecting section remote from the opening, the two connecting member arms lying parallel to each other and being steadily pressed together by direct contact with the cross member in the region, remaining together even during the insertion, the hoop arms further providing an initial tension pressing the connecting arms toward each other.

4,219,253

SCREEN

John S. Campion, 667 W. Wrightwood, Addison, Ill. 60101, and Gerald D. Stewart, Addison, Ill., assignors to John S. Campion, Addison, Ill.

Filed Nov. 20, 1978, Ser. No. 962,200
Int. Cl.² G03B 21/60
U.S. Cl. 350—129 9 Claims



1. A rear projection screen for projection television, said screen including:

a pair of plastic sheets, each sheet having generally parabolic lenticular embossments on only one side thereof with each sheet having a similar pattern of embossments,

said plastic sheets being positioned back to back with their lenticular embossed sides facing outwardly, and

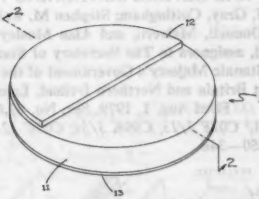
transparent means separating said plastic sheets.

4,219,254

CORRECTIVE OPTICS FOR HIGHER ORDER MODE LASERS

John A. Macken, 4039 Shadow Hill Dr., Santa Rosa, Calif. 95404

Filed Aug. 11, 1978, Ser. No. 933,109
Int. Cl.² G02B 5/10
U.S. Cl. 350—293 15 Claims



1. A corrective optics system for higher order mode lasers, comprising,

substrate means,

at least first coating means disposed on at least a first portion of a first surface of said substrate means,

said first coating means has a thickness which introduces a fraction of a wavelength retardation to a first phase portion of a laser beam impacting thereon whereby said first

phase portion is reflected inphase with a second phase portion of said laser beam not impacting said thickness by the composite including said substrate means and said first coating means.

4,219,255

TEMPERATURE COMPENSATED LIQUID CRYSTAL DEVICES

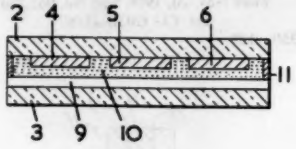
Edward P. Raynes, Malvern, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, United Kingdom

Filed Nov. 21, 1977, Ser. No. 853,477

Claims priority, application United Kingdom, Nov. 25, 1976, 49285/76

Int. Cl.² G02F 1/13; C09K 3/34

U.S. Cl. 350—346 **5 Claims**



1. A phase change liquid crystal device comprising two spaced slides at least one of which is transparent, electrode structures on the facing surfaces of the slides, means for spacing the slides apart, and containing a thin layer of a cholesteric liquid crystal material between the slides, the cholesteric liquid crystal material being a mixture of at least one liquid crystal material having a smectic and a nematic phase with at least one liquid crystal material having a cholesteric phase, the complete mixture having a positive dielectric anistropy and having the following phases with increasing temperature, crystalline—smectic—chloesteric—isotropic, the smectic to cholesteric transition occurring below the operating temperature of the device at a value selected from within the temperature range 10° to 60° C. whereby changes in k_{22} (twist elastic constant)/ϵ_a (dielectric constant) with temperature are at least partly compensated for by changes in cholesteric pitch P with temperature to stabilize the device threshhold voltage V_{th} over a range of temperatures above the smectic to cholesteric transition temperature.

4,219,256

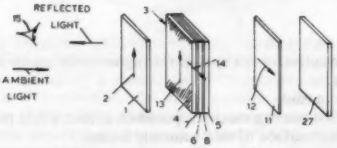
LIQUID CRYSTAL COMPOUNDS AND MATERIALS AND DEVICES CONTAINING THEM

George M. Gray, Cottingham; Stephen M. Kelly, Hull; Damien G. McDonnell, Malvern, and Alan Mosley, Reading, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

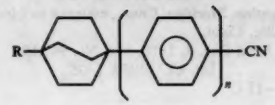
Filed Aug. 1, 1979, Ser. No. 62,624

Int. Cl.² C02F 1/13; C09K 3/34; C07C 121/60, 121/64

U.S. Cl. 350—346 **30 Claims**



1. A liquid crystal compound having a molecular structure



where R is an alkyl group and

is a bicyclo (2.2.2) octane ring, n being an integer greater than zero.

4,219,257

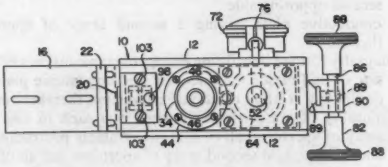
OPHTHALMIC ENDOTHELIAL MICROSCOPE

Thomas E. Slappey, and Dan B. Capehart, both of Gainesville, Fla., assignors to American Hospital Supply Corporation, Evanston, Ill.

Continuation of Ser. No. 738,372, Nov. 3, 1976, abandoned. This application Nov. 13, 1978, Ser. No. 959,532

Int. Cl.² A61B 3/00, 3/10

U.S. Cl. 351—1 **1 Claim**



1. An opthalmic microscope for examining an eye of a living patient whose head is rigidly fixed, comprising: a base with a generally horizontal track; a casing mounted on the track of the base for coarse horizontal movement relative to the base; said casing being generally rectangular in shape with top, bottom, front, rear, and side walls, and having a width that is substantially smaller than its height, whereby substantially the entire casing can be positioned to one side of a patient's nose during examination of an eye while leaving the other eye available for focusing on a wall chart or the like; an objective lens mounted on the front wall of the casing; a viewing lens mounted on the rear wall of the casing so that the line of sight between the viewing and objective lenses is generally horizontal; a light source mounted on the casing's top wall, which light source has a width eqaul to or less than the casing's width so that the light source does not interfere with the patient's anatomy; a first prism in the casing adjacent a rear wall of the casing; a first adjustable screw connected to the first prism and protruding through the casing for angularly adjusting the first prism; a second prism in the casing adjacent a front wall of the casing; a second adjustable screw connected to the second prism and protruding through the casing for angularly adjusting the second prism; said first and second prisms being located in the casing above the line of sight between viewing and objective lenses; a third prism located in the casing below the second prism to direct light through the objective lens; a driven gear mounted on an exterior of the objective lens to rotatably adjust the objective lens for fine focusing; a driving gear meshing with the driven gear of the objective lens, the driving gear being substantially smaller in diameter than the driven gear; a shaft extending through the casing along an axis generally parallel and located below the line of sight between

the viewing and objective lens, a front end of the shaft being connected to the driving gear, and a rear of the shaft being connected to a knob outside the casing so that the shaft and gears do not increase the width of the casing; a gauge mounted on one side wall of the casing and this gauge is operatively connected to the shaft to record movement of the objective lens through the shaft movement.

4,219,258

ILLUMINATING DEVICE FOR USE IN A FUNDUSCOPIC APPARATUS

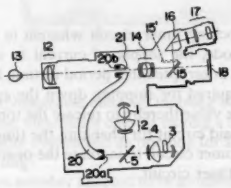
Naomiki Araki, and Yasuo Inoue, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 748,190, Dec. 7, 1976, abandoned. This application Jul. 24, 1978, Ser. No. 927,601

Claims priority, application Japan, Feb. 10, 1975, 50-116595

Int. Cl.[2] A61B *3/10, 3/14;* G03B *29/00*

U.S. Cl. 351—16 **1 Claim**



1. In a photographic apparatus of a fundus oculi comprising an objective lens system arranged near an eye to be inspected in a main optical viewing path; a photographic lens system arranged in said main optical path for focusing light reflected from the retina of the eye to be inspected on the surface of a film through an objective lens system; at least one light source; and means for establishing an illuminating optical path between said light source and the main optical path such as to present an annulus of light surrounding said main optical path for illuminating the eye, the improvement comprising:

(a) a light tube concentric about the main optical path disposed between the objective lens system and the photographic lens system; and

(b) a light guide consisting of a bundle of optical fibers having one end portion arranged so as to partially enclose said light tube forming a partial annulus thereabout, said one end of said bundle of fibers being disposed for rotation about said tube and the other end of said bundle of optical fibers arranged near said at least one light source in the illuminating optical path, whereby alignment of the elements in the optical light path is less critical and the light from said at least one light source can be used more efficiently, and whereby through the use of said bundle of said optical fibers only partically encircling said tube and being mounted for rotation thereon the projection image on the cornea of the eye to be examined by the objective lens system can be rotated to remove a bad influence on diffusion of light.

4,219,259

EDITING MACHINE

Robert A. Olodort, 536 Highland Ave., Los Angeles, Calif. 90036

Division of Ser. No. 873,146, Jan. 27, 1978, which is a continuation-in-part of Ser. No. 699,615, Jun. 25, 1976, abandoned. This application Dec. 11, 1978, Ser. No. 968,472

Int. Cl.[3] G03B *21/00*

U.S. Cl. 352—129 **17 Claims**

1. A film editing machine, said machine comprising:

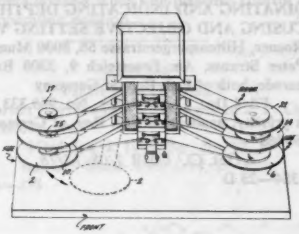
(a) a rotably driven shaft;

(b) a film sprocket disposed coaxially about said shaft to movably support the film;

(c) a cylindrical prism, said prism also being coaxially mounted on said shaft, and spaced axially from said film sprocket;

said prism further having a hollow core and a plurality of facets on its internal surface, each of said facets being disposed in a plane perpendicular to a radius from the axis of the prism cylinder which radii are spaced equidistantly from each other about said axis and lie in a common plane, said sprocket and said prism being axially interconnected on said shaft to rotate together as an assembly with said shaft;

(d) a light source, said light source being disposed to direct a light beam in a first path extending toward the projected axis of the prism;



(e) optical means first to divert said first light path to a second path parallel to said shaft and extending within the hollow core of the prism and then to redivert said second light path to a third light path parallel to the first light path and passing radially outwardly of said cylindrical prism through at least one facet of the latter;

(f) first corrector lens means, said lens means being disposed closely outside, but spaced from the outer cylindrical surface of said prism, and in said third light path; and,

(g) means to support said motor driven shaft and said sprocket and prism assembly thereon, said light source, said optical means, and said first and second lens means.

4,219,260

CAMERA HAVING A RELEASE CONTROL DEVICE

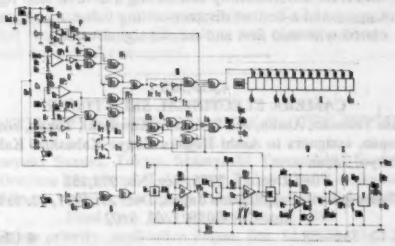
Nobuaki Date, Kawasaki; Masanori Uchidoi, Yokohama; Hiroshi Aizawa, Kanagawa; Masami Shimizu, Tokyo, and Yoshiyuki Takishima, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 6, 1978, Ser. No. 883,904

Claims priority, application Japan, Mar. 11, 1977, 52/26672; Mar. 11, 1977, 52/26673

Int. Cl.[2] G03B *9/64;* G05B *13/02*

U.S. Cl. 354—23 D **37 Claims**



1. A camera comprising:

(a) actuating means for carrying out the actuating operation of a camera;

(b) a circuit for measuring the brightness of the object to be

photographed, by means of the operation of the actuating means;

(c) an exposure control mechanism for carrying out the exposure control of the camera; and

(d) control means for controlling the time at which the actuating signal of the exposure control mechanism is produced, in accordance with the magnitude of the output signal of the light measuring circuit

wherein the control means includes delay means for delaying the time at which the actuating signal of the exposure control mechanism is produced, in accordance with the magnitude of the output signal of the light measuring circuit.

4,219,261

PHOTOGRAPHIC CAMERA WITH A MEANS FOR COORDINATING AND INDICATING DEPTH OF FIELD FOCUSING AND OBJECTIVE SETTING VALUES

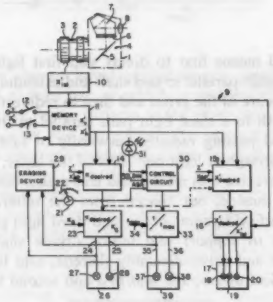
Ortwin Rosner, Hiltenspergerstrasse 58, 8000 Munchen 40, and Karl-Peter Strauss, Am Feuerteich 9, 3300 Braunschweig-Volkmarode, both of Fed. Rep. of Germany

Filed Dec. 11, 1978, Ser. No. 968,333

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1977, 2755368

Int. Cl.[2] G03B *3/08, 17/18*

U.S. Cl. 354—23 D **16 Claims**



1. A photographic camera having an objective, a viewfinder coupled to said objective and comprising:

(a) means for converting the setting of said objective into electrical signal values, x'_{actual},

(b) memory storage means for storing said electrical signal values, said memory storage means storing a first signal value, x_f', corresponding to the objective setting associated with a far point desired to be photographed, and for storing a second signal value, x_n', corresponding to the objective setting associated with a near point desired to be photographed, and

(c) calculator means connected to said memory storage means for automatically calculating a desired stop figure, $k_{desired}$, and a desired distance-setting value, $x'_{desired}$, associated with said first and second signal values.

4,219,262

CAMERA ELECTRICAL SELF-TIMER

Yukio Takaoka, Asaka, and Masahiro Kawasaki, Tokyo, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

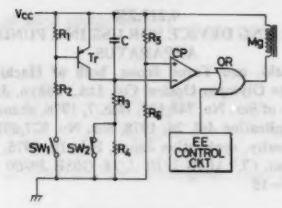
Filed Dec. 21, 1978, Ser. No. 972,152

Claims priority, application Japan, Dec. 27, 1977, 52/159572

Int. Cl.[2] G03B *7/08, 9/02*

U.S. Cl. 354—38 **8 Claims**

1. In a camera having multiple modes of photography including a shutter priority automatic exposure adjustment (EE) mode wherein in the (EE) mode, light passing through a lens aperture is received by a light receiving element while the lens aperture is being stopped down, and when an aperture value (the quantity of light) suitable for preset shutter speed and film sensitivity is obtained, the supply of current of an aperture control magnet having attracted an aperture locking lever is interrupted to lock the operation of the aperture thereby to determine an aperture value and simultaneously the locking of a top curtain is released by said lever, the improvement comprising; an interlocking timer circuit wherein in modes other than the (EE) mode, the supply of current to said aperture control magnet is interrupted in a period of time longer than a period of time required for stopping down the aperture to its minimum aperture value thereby to release the top curtain; and switch means in said circuit for changing the time constant of said interlocking timer circuit to increase the operating time of said interlocking timer circuit.



4,219,263

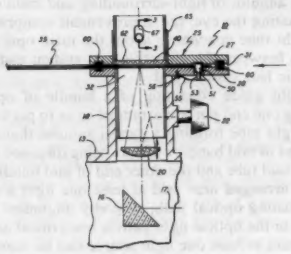
CAMERA FOR USE IN A TELESCOPE

Robert D. West, 1031 Hanshaw Rd., Ithaca, N.Y. 14850

Filed May 31, 1979, Ser. No. 44,259

Int. Cl.[2] G02B *23/00*; G03B *17/48*

U.S. Cl. 354—79 **12 Claims**



1. A camera that is capable of being mounted within the focus mount tube of a telescope through which the telescopic image passes including

a housing having an exposure aperture passing vertically therethrough,

a hollow mounting cylinder depending downwardly from the bottom wall of the housing, said cylinder being coaxially aligned with the aperature and arranged to enclose the bottom entrance to the aperture therein, said cylinder being slidably received within the focus mount tube to permit the telescopic image to be presented upon an image plane lying within said housing,

said housing containing a horizontal slit passing through both the housing and the aperture, said slit being aligned within the image plane of the telescope and arranged to guide film over said aperture,

locating means for engaging film passed into said slit and positioning the film over the aperture whereby the film is exposed to the telescopic image.

4,219,264

CLOSE-UP DEVICE FOR PHOTOGRAPHIC VIEWFINDER CAMERAS

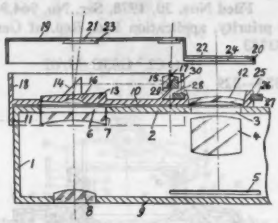
Hans-Jürgen Rodeck, Über dem Steinbruch 2, Erkerode, Fed. Rep. of Germany (3301)

Filed Sep. 7, 1978, Ser. No. 940,365

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1977, 2740929

Int. Cl.[2] G03B *11/00, 13/18*

U.S. Cl. 354—162 **14 Claims**



1. An interchangeable close-up focusing device for use with a photographic viewfinder camera having a front wall containing a viewfinder system and an opening for a camera objective lens, comprising:

a. a support member adapted to be mounted to the front wall of said camera;

b. a supplementary lens mounted on said support member so as to be in optical alignment with said camera objective lens for enhancing the close-up focusing power of said objective lens;

c. a parallax correction prism mounted on said support so as to be in optical alignment with said camera viewfinder system; and

d. a non-symmetric base view rangefinder system arranged on said support member such that the rangefinder beam is deflected into the field of view of said camera viewfinder, said parallax correction prism and said rangefinder system having their optical powers adjusted to correspond to the change in object distance resulting from interposition of said supplemental lens in the optical field of said camera objective lens.

4,219,265

PHOTOGRAPHIC VIEW FINDER CAMERA WITH RETRACTABLE LENS TUBE

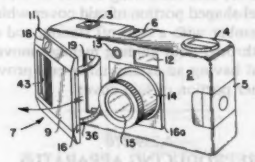
Heinz Waaske, Konstrukteur, Fed. Rep. of Germany, assignor to Rollei-Werke Franke & Heidecke, Braunschweig, Fed. Rep. of Germany

Filed Jul. 2, 1979, Ser. No. 53,978

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1978, 2829459

Int. Cl.[3] G03B *17/04*

U.S. Cl. 354—187 **12 Claims**



1. A photographic camera, comprising:

a camera housing having an aperture in the front face thereof;

a retractable lens tube positioned in said aperture of said camera housing;

a platelike control handle mounted on said camera housing so as to be slidable in a plane parallel to the front of said camera housing and pivotable about an axis of rotation located at a first edge of the front of said camera housing,

a storage position wherein said platelike control handle is parallel to the front of said camera housing substantially covering said retractable lens tube, and

an operating position wherein said platelike control handle is pivoted at an angle with respect to the front of said camera housing forming a rocking lever; and

coupling means mechanically connected between said platelike control handle and said retractable lens tube, for projecting said retractable lens tube beyond the front of said camera housing when said platelike control handle is in said operating position.

4,219,266

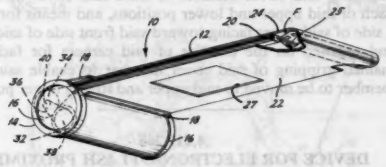
FILM CARTRIDGE

James P. Carter, Norristown, Pa., assignor to J. P. Carter Co., Inc., Norristown, Pa.

Filed Jan. 2, 1979, Ser. No. 12

Int. Cl.[2] G03B *1/18, 1/24, 17/26*

U.S. Cl. 354—275 **8 Claims**



1. A film cartridge including a generally flat elongated portion having a first film pathway along one side and a second film pathway along the other side, one of said sides being formed with an opening for exposing a portion of film, a generally cylindrical portion at one end of said elongated portion, a film feed spool and a film take-up spool rotatably mounted in said cylindrical portion in side-by-side relationship, drive means between said spools so that rotation of one spool causes rotation of the other spool, roller means at the other end of said elongated portion adjacent the free ends of said pathway, said roller means having end portions adjacent the edges of the film and including driving means for cooperating with a film advance mechanism in a camera, guide means in the form of an arcuate member extending from said other end of said elongated portion and adjacent a portion of said roller means such that the film extends from said first pathway to said second pathway with the film in engagement with said arcuate member such that one edge is in engagement with said driving means whereby the film can be pulled from said feed spool along said first pathway causing rotation of said take-up spool so that the film can be pulled along said second pathway and wound on said take-up spool.

4,219,267

SAFETY DEVICE FOR EXPOSURE FACTOR SETTING DIAL

Masayuki Suzuki, Tokyo; Masayoshi Yamamichi, Kawasaki; Hiroyasu Murakami, Tokyo, and Tadashi Ito, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 22, 1978, Ser. No. 962,885

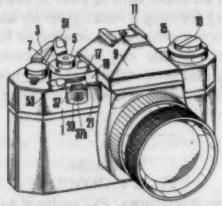
Claims priority, application Japan, Jan. 13, 1978, 53-3136

Int. Cl.[2] G03B *17/00*

U.S. Cl. 354—289 **5 Claims**

1. In a camera including a casing having an upper side and a front side, film winding means mounted on said upper side of

said casing and being manually horizontally movable, and a dial manually operable to effect setting of exposure values for said camera, said dial being mounted on said upper side of said casing and including a manually engageable surface extending toward the front side thereof and generally parallel thereto, the improvement of a safety device comprising a cover member mounted on said casing on said front side thereof and extending generally parallel therewith, means mounting said cover on said camera for movement vertically between an upper position wherein said cover member extends over said dial to block manual access to said dial, and a lower position permitting access to said dial, first means located within said camera engaging said cover member to hold said cover member at each of said upper and lower positions, and means formed on a side of said cover facing toward said front side of said casing and exposed on the exterior of said camera for facilitating manual gripping of said cover member to enable said cover member to be moved to said upper and to said lower positions.



4,219,268

DEVICE FOR ELECTRONIC-FLASH PROXIMITY PHOTOGRAPHY

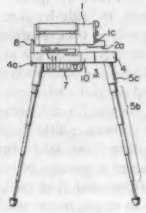
Yasuo Uchida, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Dec. 18, 1978, Ser. No. 970,645

Claims priority, application Japan, Dec. 19, 1977, 52-151692

Int. Cl.[2] G03B *17/00*

U.S. Cl. 354—293 **3 Claims**



1. A tripod assembly adapted to support a camera for photographing an object closely located thereto, said assembly comprising a platform having means for mounting the camera on its upper surface and above the object, said platform having a first opening for receiving the camera lens, and a second opening for viewing the object below, and three vertically adjustable legs pivotally mounted to the underside of said platform, the pivots being so positioned that the lower ends of said legs when extended and as seen from above form two sides of a definable rectangular frame with respect to the object, one side of said frame being formed by a straight line connecting the ends of two of said legs and the second side being formed by a line drawn from the third leg and intersecting said first straight line at right angles thereto, while at the same time the extended length of said legs determines the distance between the camera and the object to be photographed, and means holding said legs to the underside of said platform in their retracted and nonextended position parallel to and within the surface area of said platform and about said first opening.

4,219,269

DEVELOPING DRUM FOR PHOTOGRAPHIC MATERIAL

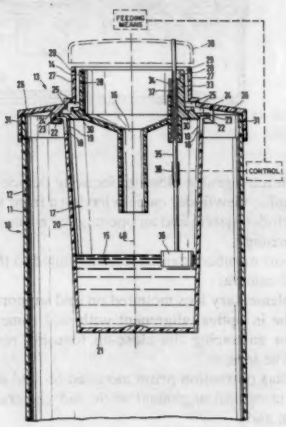
Reiner Bernhardt, Bergneustadt, Fed. Rep. of Germany, assignor to Johannes Bockemuehl, Gummersbach-Derschlag, Fed. Rep. of Germany

Filed Nov. 30, 1978, Ser. No. 964,941

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1977, 2753743

Int. Cl.[2] G03D *13/02*

U.S. Cl. 354—329 **6 Claims**



1. A film-developing tank, comprising a vessel having an axis and an opening and being adapted to receive a film to be developed and a developing medium for the film; a cover axially closing said opening and having an axially outer funnel-shaped portion for pouring-in the developing medium therethrough and an axially inner portion for receiving the developing medium so that said cover simultaneously forms a volume metering container, said outer portion having an inlet and an outlet, and said inner portion surrounding said outlet of said outer portion and being connected with the latter, said inner portion having outlet openings in the region of said opening of said vessel, said cover having a separate pour-out opening provided in the region of connection of said portions with one another and extending from the interior of said vessel so that the developing medium can pour out from the latter through said pour-out opening; and measuring means for measuring the amount of the developing medium in said outer funnel-shaped portion of said cover and indicating means for indicating when a predetermined amount of the developing medium has been introduced in the same, said measuring means including a wall of said outer funnel-shaped portion of said cover which is formed as a guiding member with a read-off station, and a measuring rod extending through said guiding member movable relative to the same and having an axially inner end provided with a float in said inner portion of said cover.

4,219,270

REPRODUCING APPARATUS

Donald J. Weikel, Jr., and John S. Bernhard, both of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

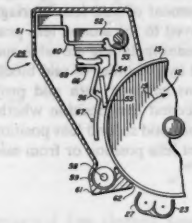
Filed Aug. 29, 1979, Ser. No. 70,597

Int. Cl.[3] G03G *15/00*

U.S. Cl. 355—3 R **10 Claims**

1. Reproducing apparatus comprising an image support

surface upon which an image may be formed, means for moving the image support surface about a closed path, means for forming a developed image on said image support surface, means for transferring said developed image from said image support surface to a transfer member, means for cleaning said image support surface after said developed image has been



transferred to said transfer member, said cleaning means including cleaner housing means, the improvement comprising restrictor guide means positioned within the cleaner housing means such that any transfer member present on the image support surface as it moves into the cleaner housing means will not completely enter the cleaner housing means.

4,219,271

IMAGE FORMING METHOD AND DEVICE FOR CONTROLLING IMAGE DENSITY

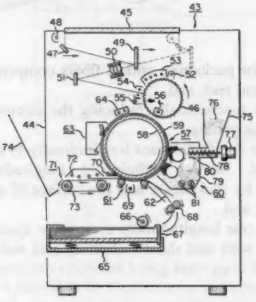
Masharu Ohkubo, Kawasaki; Yujiro Ando, Yokohama; Toshio Honma, Tokyo; Shuji Murakawa, Yokohama; Katsumi Murakami, Kawasaki, and Katsushi Furuichi, Yokohoma, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

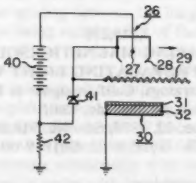
Filed Mar. 22, 1978, Ser. No. 888,878

Claims priority, application Japan, Mar. 26, 1977, 52-33839, 52-33840, 52-33841, Apr. 26, 1977, 52-48243

Int. Cl.² G03G *15/00*

U.S. Cl. 355—14 R **35 Claims**





1. An image forming apparatus comprising:

(a) first and second electrically chargeable members;

(b) first processing means to form a primary electrostatic latent image on said first chargeable member;

(c) second processing means to form a secondary electrostatic latent image on said second chargeable member based on said primary electrostatic latent image, to develop said secondary electrostatic latent image, and to transfer the thus developed image onto an image transfer material;

(d) means for detecting a visible image forming capability of one of the electrostatic latent images; and

(e) means for controlling in response to an output from said detecting means, at least one of said first processing means and said second processing means so as to form a developed image of a predetermined image density.

4,219,272

ELECTROPHOTOGRAPHIC COPIER WITH REPLACEABLE PHOTOCONDUCTIVE SHEET

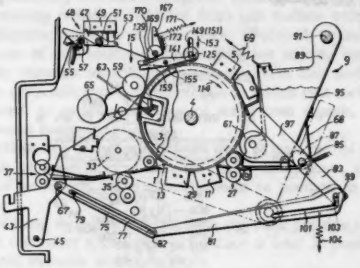
Dieter Brückel, and Günther Jahn, both of Kaufbeuren, Fed. Rep. of Germany, assignors to Olympia Werke AG, Wilhelmshaven, Fed. Rep. of Germany

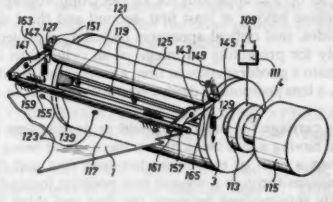
Filed Apr. 20, 1979, Ser. No. 32,002

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1978, 2817300

Int. Cl.² G03G *15/00*; B41F *1/28*

U.S. Cl. 355—16 **14 Claims**





1. In an electrophotographic copier including a replaceable photoconductive sheet having a leading edge portion and a trailing edge portion; a guide drum rotatably supported by a drum shaft and having a holding device for securing the leading sheet edge to the guide drum; a charging station, an illuminating station, a developing station, a transfer station and a conductive sheet cleaning station arranged in a circumferential distribution about the guide drum; the improvement comprising:

(a) opening means incorporated in at least one of said stations to provide for a mobility thereof between a closed, operative position and an open, inoperative position in which said drum is accessible for replacing said photoconductive sheet;

(b) a pressing roll displaceably supported adjacent said guide drum in a parallel orientation with said drum shaft; said pressing roll having a position in which it is out of contact

with said guide drum and a position in which it is in pressing engagement with said guide drum;

(c) control means operatively connected to said opening means and to said pressing roll for moving said pressing roll into said pressing engagement with said guide drum when said one station is moved into said inoperative position and for moving said pressing roll out of contact with said guide drum when said one station is moved into said operative position; and

(d) adhesive means carried by said photoconductive sheet for bonding said trailing and leading edge portions to one another by the pressure exerted by said pressing roll as said guide drum is rotated while said pressing roll is in its said pressing engagement with said guide drum subsequent to the attachment of said leading edge portion of said photoconductive sheet to said holding device of said guide drum.

4,219,273

OPTICAL APPARATUS FOR ELECTROPHOTOGRAPHIC COPYING MACHINE

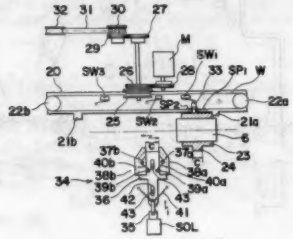
Hiroshi Ikeda, Aichi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 10, 1979, Ser. No. 28,795

Claims priority, application Japan, Apr. 15, 1978, 53/50113[U]

Int. Cl.[2] G03B 27/70; G02B 7/11

U.S. Cl. 355—60 **8 Claims**



1. In an optical apparatus for an electrophotographic copying machine having at least first, second and third magnification modes, said optical apparatus including a projecting lens assembly for projecting an image of an original to be reproduced onto a photoreceptor at first, a second and third magnifications, a lens positioning device which comprises, in combination:

a lens carriage for supporting said projecting lens assembly and having a first block means thereon and being movable along a path of movement between first and third lens positions through a second lens position located substantially intermediate between the first and third lens positions in a direction parallel to the optical axis of the projecting lens assembly, said first, second and third lens positions being for the first, second and third magnifications, respectively, and corresponding to the respective first, second and third magnification modes;

a first driving means connected to said lens carriage for driving said lens carriage between the first and third lens positions through the second lens position;

separate means for defining the respective first and third lens positions;

a second block means disposed in alignment with the second lens position, one of said block means being fixed and the other being supported for movement between an engaged position toward said path and a disengaged position which is retracted from said path in a direction perpendicular to the direction of movement of the lens carriage;

a second driving means connected to the movable one of said block means for driving said movable block means between the engaged and disengaged positions and adapted to be brought into operation to drive the movable block means from the disengaged position to the engaged position only when the copying machine is to be set in the second magnification mode; and

blocking element means on one of said block means and cooperable with the other block means when the movable one of said block means is in the engaged position for blocking movement of said lens carriage when said lens carriage is moved to the second lens position, said blocking element means including movable and fixed means for being engaged by the other of said block means for positioning the lens carriage with said projecting lens precisely at the second lens position whether said lens carriage approaches said second lens position from the direction of said first lens position or from said third lens position.

4,219,274

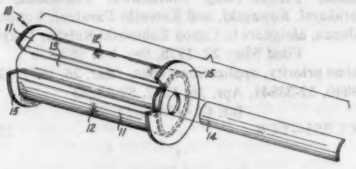
APPARATUS AND METHOD FOR PACKAGING OPTICAL FIBERS

Franklin W. Dabby, Woodbridge, and Ronald B. Chesler, Cheshire, both of Conn., assignors to Times Fiber Communications, Inc., Wallingford, Conn.

Filed Jul. 27, 1978, Ser. No. 928,454

Int. Cl.[2] G01N 21/01, 21/00

U.S. Cl. 356—244 **12 Claims**



1. A device for packaging optical fibers comprising:

(a) a cylindrical reel; and,

(b) means for mechanically reducing the circumference of said reel comprising:

(i) a flexible sheath fastened longitudinally to a portion of said reel, thereby defining a longitudinal cavity bounded by said sheath and the surface of a portion of said reel; and,

(ii) at least one longitudinally removable spacer member disposed with said sheath, abutting said reel.

4,219,275

RING LASER HAVING MAGNETIC ISOLATION OF COUNTER-PROPAGATING LIGHT WAVES

Rodney D. Henry, Saratoga, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 22, 1978, Ser. No. 918,305

Int. Cl.[2] G01B 9/02; G01P 9/00

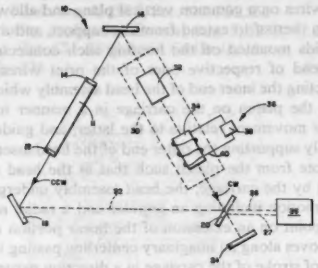
U.S. Cl. 356—350 **22 Claims**

1. A ring laser comprising:

means for defining an optical cavity on a closed optical path;

light amplifying means disposed in said optical cavity for sustaining counter-propagation around said closed optical

path of at least one pair of similarly polarized light waves; and



bipolar, nonreciprocal loss element means for preventing simultaneous collinear propagation of said pair of light waves on said closed optical path.

4,219,276

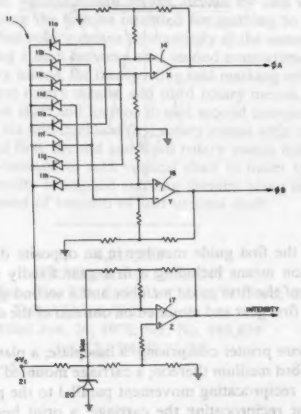
DETECTION SYSTEM FOR RING LASER GYRO

Adrian K. Dorsman, Bellflower, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 2, 1978, Ser. No. 947,911

Int. Cl.[3] G01B *9/02, 9/00*

U.S. Cl. 356—350 **6 Claims**



1. In a detection system for a ring laser gyro having a plurality of mirrors placed to form clockwise and counter-clockwise rotating beams, an array of photo-diodes mounted to receive both of said beams, said photo-diodes generating fringe pattern signals in accordance with the difference frequency between the two beams, said diodes being in the form of longitudinal spaced strips, the spacing between the longitudinal centerlines of adjacent strips being equal to 90° of the fringe pattern signals, the number of said strips being eight; the outputs of the first and fifth, second and sixth, third and seventh and fourth and eighth strips being in phase with each other respectively,

differential amplifier means receiving the outputs from one of the terminals of each of said photo-diodes in a preselected manner for generating a pair of fringe pattern signals in quadrature relationship with each other, and

amplifier means in series with the current path to all of the other of the terminals of said photo-diodes for generating a signal having minimum fluctuations which is in accordance with the sum of the currents generated by all of said diodes and represents the total intensity of the fringe pattern signals.

4,219,277

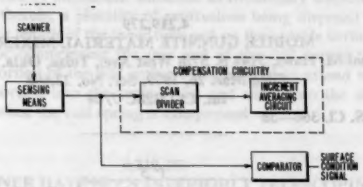
METHOD OF DETECTING FLAWS ON SURFACES

Nick Yaroshuk, White Oak; Miklos Sarkozi, and Eugene G. Vaerewyck, both of Murrysville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 9, 1978, Ser. No. 932,234

Int. Cl.[2] G01N *21/22*

U.S. Cl. 356—431 **6 Claims**



1. In a method of surface measurement of the type which utilizes advancing a surface past a source of electromagnetic radiation directing said electromagnetic radiation toward said surface, sensing radiation reflected from said surface with an electromagnetic radiation sensing means, effectively scanning at least one of said source and said radiation sensing means repeatedly through identifiable positions across said surface generally perpendicular to the direction in which said surface is advanced, to produce a series of serial scan signals, the improvement comprising:

a. dividing each of said scan signals from at least two of said series of scans into at least 30 signal increments, each signal increment being identifiable as to position in the scan;

b. combining signal increments from the same position of at least one other scan signal to produce at least 30 position related dynamic average signals;

c. dividing a scan signal from an additional scan into at least 30 additional positions related signal increments; and

d. comparing said additional increment signals with the dynamic average signal for the same position to generate a signal indicative of surface condition.

4,219,278

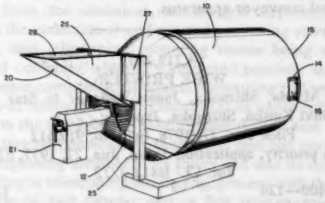
ASPHALT-AGGREGATE DRUM MIXING APPARATUS

Robert L. Mendenhall, 1770 Industrial Rd., Las Vegas, Nev. 89102

Continuation-in-part of Ser. No. 871,351, Jan. 23, 1978, and a continuation-in-part of Ser. No. 906,734, May 17, 1978. This application Jan. 8, 1979, Ser. No. 1,051

Int. Cl.[2] B28C *5/46*

U.S. Cl. 366—4 **7 Claims**



1. An apparatus for heating and mixing asphalt-aggregate composition comprising:

a rotatable drum having an open port at one end thereof, a burner member for introducing hot gases of combustion into said drum through said open port, and wherein exhaust gases from within said drum are vented substantially only through said open port,

a recovery port having closure means cooperating therewith for selectively opening and closing said recovery port, and located adjacent a drum end opposite said open port, and

a chute member, having an inclined surface secured adjacent said open port having a lower edge extending across said open port wherein composition on said inclined surface falls gravitationally through said open port into said drum.

4,219,279

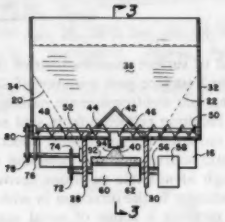
MOBILE GUNNITE MATERIAL MIXER

Paul M. Haws, 3144 S. 57th West Ave., Tulsa, Okla. 74107

Filed Mar. 26, 1979, Ser. No. 23,698

Int. Cl.³ B28C 7/04

U.S. Cl. 366—35 **6 Claims**



1. A mobile gunnite material mixer comprising a wheeled vehicle having a cab section and a bed section, a first load carrying portion mounted on the bed section for receiving a quantity of sand therin, a second load carrying portion mounted on the bed section for independently receiving a quantity of cement therein, conveyor means operably mounted on the bed section and extending beneath the first and second load carrying sections, a mixer apparatus carried by the bed section and disposed outboard of the second load carrying portion and having one end in open communication with the conveyor apparatus and the opposite end open for discharging materials therefrom, said first and second load carrying portions being provided with discharge port means at the lower portions thereof for selectively depositing the sand and cement on the conveyor apparatus whereby the conveyor apparatus conveys the sand and cement to the mixer apparatus for discharge therein, and wherein the second load carrying section comprises a hopper, a baffle member disposed within the hopper for facilitating even distribution of the cement material therein, and augar means operably secured within the hopper for facilitating movement of the cement to and from the discharge port means, and wherein drive shaft means is operably connectd with the conveyor apparatus, and gear train means is interposed between the drive shaft means and the augar means within the hopper for simultaneous actuation of the augar means and conveyor apparatus.

4,219,280

WIRE PRINTER

Katsumi Maeda, Shizuoka, Japan, assignor to Star Seimitsu Kabushiki Kaisha, Shizuoka, Japan

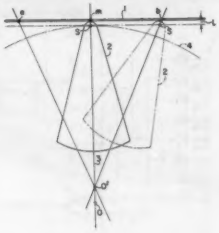
Filed Jun. 27, 1978, Ser. No. 919,612

Claims priority, application Japan, Jun. 27, 1977, 52-75579

Int. Cl.² B41J 3/12

U.S. Cl. 400—124 **13 Claims**

1. A wire printer comprising: a baseplate; a platen for guiding a record medium thereon; a carriage mounted on the baseplate for reciprocating movement parallel to the platen; drive means for reciprocating the carriage; a print head assembly including a plurality of print wires which are selectively movable to different points on the record medium, a housing for the print wires having a wire support which aligns one end of the print wires on a common vertical plane and allowing a linear portion thereof to extend from the support, and a plurality of solenoids mounted on the housing each connected with the other end of respective ones of the print wires; means for connecting the inner end of the head assembly which is located nearer the platen on the carriage in a manner to permit its angular movement relative to the latter; and guide means for movably supporting the outer end of the head assembly which is remote from the platen such that as the head assembly is carried by the carriage, the head assembly undergoes a composite motion including an angular and a radial motion such that a point on an extension of the linear portion of the print wire moves along an imaginary centerline passing through the center of stroke of the carriage in a direction perpendicular to the platen, the guide means comprising a first guide member having its one end pivotally mounted on the baseplate in alignment with the imaginary centerline and its other end slidably and pivotally engaged with the carriage, a second guide member having its one end pivotally mounted on the baseplate in alignment with the imaginary centerline and its other end slidably and pivotally engaged with the outer end of the head assembly, and connection means for connecting the second guide member with the first guide member in a manner to permit the second guide member to follow the angular move-



ment of the first guide member in an opposite direction, the connection means including a first gear fixedly mounted on one end of the first guide member and a second gear meshing with the first gear and mounted on one end of the second guide member.

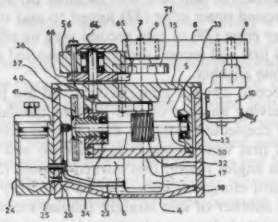
6. A wire printer comprising: a baseplate; a platen for guiding a record medium thereon; a carriage mounted on the baseplate for reciprocating movement parallel to the platen; drive means for reciprocating the carriage; a print head assembly including a plurality of print wires which are selectively movable to different points on the record medium, a housing for the print wires having a wire support which aligns one end of the print wires on a common vertical plane and allowing a linear portion thereof to extend from the support, and a plurality of solenoids mounted on the housing each connected with the other end of respective ones of the print wires; means for connecting the inner end of the head assembly which is located nearer the platen on the carriage in a manner to permit its angular movement relative to the latter; and guide means for movably supporting the outer end of the head assembly which is remote from the platen, the guide means including a pair of guide pins provided on the outer end of the head assembly and extending in a direction perpendicular to the baseplate, a support plate member extending parallel to the baseplate, and slot means in the support plate member engageable with the guide pins, the slot means forming an angle with respect to the imaginary centerline which passes through the center of travel of the carriage in a direction perpendicular to the platen.

4,219,281

DEVICE FOR MARKING ARTICLES

Jean P. Volat, Paris, France, assignor to Hotchkiss-Brandt Sogeme H.B.S., Paris, France

Filed Aug. 4, 1978, Ser. No. 931,155
Claims priority, application France, Aug. 5, 1977, 77 24221
Int. Cl.[2] B41J *3/04*; G01D *15/18*
U.S. Cl. 400—126 **8 Claims**



1. Device for marking articles by ejecting jets of ink or other marking substance, comprising: gearing; a housing divided into a first and a second closed compartment, said first compartment containing said gearing, said second compartment being at least partly filled with marking substance; a substantially vertical shaft driven from an electrical motor, traversing said first and second compartment; a substantially horizontal shaft lcoated in said first compartment driven by said vertical shaft through said gearing; first rotary means, driven by said horizontal shaft, for ejecting marking substance in the form of successive jets; second rotary means, driven by said vertical shaft, for causing the articles intended for marking to pass in front of said first rotary means substantially at the same speed; means, defining a duct between said second compartment and said first rotary means, for transporting said marking substance to said said first rotary means; and third rotary means, driven by said vertical shaft and located in said second compartment, for supplying via said duct said first rotary means with marking substance; said first, second and third rotary means being mechanically connected to said vertical shaft in order to drive them, the intensity of applied marking thereby being independent of the speed of rotation of said vertical shaft.

4,219,282

WRITING IMPLEMENT

Chun-Liang Kuo, No. 328, 2nd Fl., Cheng Yi North Rd., San Chung City, Taipei Hsien, Taiwan

Filed Jun. 26, 1978, Ser. No. 919,039
Int. Cl.[2] B43K *21/16*
U.S. Cl. 401—57 **7 Claims**

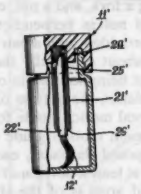
1. A writing implement comprising: an outer casing; a coil spring having one end formed into a hooked portion and the other end being free, the spring being disposed within the outer casing; and an inner tube adapted for insertion into the outer casing and through the coil spring, the inner tube having an inside channel for storing a plurality of presharpened leads therein, the leads being stored in an end-to-end fashion with the sharpened end being pointed towards the front end of the inner tube, the front end of the inner tube being formed into conical clamp portions having two diametrically opposed slots extending from the front end and along the longitudinal axis of the inner tube, the slots having different lengths, the first slot being about $\frac{1}{4}$ the length of a presharpened pencil lead, the second slot being five times the length of the first slot, the end wall of the second slot being excavated on the outside surface and along the longitudinal axis of the inner tube to form a slip channel, the inside diameter of the inner tube being reduced at the front end by an amount sufficient to frictionally withhold the leads therein, a plurality of protrusions being disposed at about $\frac{1}{2}$ the length of the inner tube and on the outside surface thereof for compressing the free end of the coil spring the hooked portion of the coil spring being aligned to extend the hooked portion into the second slot and slide onto the slip channel when the coil spring is compressed.

4,219,283

CONTAINER HAVING AN INTERIORLY TELESCOPING DISPENSING MEMBER

Michael A. Buckley, 816 Jersey Ave., Normal, Ill. 61761, and David F. Friedman, 610 W. Seminary, Bloomington, Ill. 61701

Filed Apr. 17, 1978, Ser. No. 897,039
Int. Cl.[2] A46B *11/00*
U.S. Cl. 401—129 **1 Claim**



1. In combination with a hollow container having a top with an opening therein and an interior bottom wall spaced a predetermined distance from the top, a plastic closure having an end wall and adapted to be secured removably in a closed position in which said end wall engages said top, said closure being removable from said closed position to permit contents of the container to be dispensed, said closure having a flat planar top end wall, a dispensing member for the powdered contents of said container, telescoping means mounting said dispensing member on said closure for movement between a retracted position spaced from said end wall a distance no greater than said predetermined distance when the closure is in its closed position and an extended position spaced from the end wall a distance greater than said predetermined distance to permit the dispensing member to be extended through said top container opening and engage said bottom wall after the closure has been removed from the container, an integral depending boss formed on the underside of said cap and projecting toward said container, said telescoping mounting means being entirely within said container when in a retracted position, said telescoping means comprising elongated telescoping rod and tubular parts, said tubular part being secured at an upper end to said boss and on the underside of said top end wall of said closure and extending perpendicularly therefrom, said rod part carrying said dispensing member at its lower end and its other end portion being in telescoping sliding engagement with the lower end portion of said tubular part, a first interengaging stop surface on the lower end of a bearing sleeve, said bearing sleeve being on the upper end of said rod and in sliding engagement with said tubular part and having a length substantially

less than the length of said rod part, an intwined shoulder on the lower end of said tubular part defining a second interengaging stop surface for engaging said first stop surface for limiting movement of said rod part and said dispensing member thereon and at said extended position of the member and to prevent separation of said rod and tubular parts from each other.

4,219,284

ARTICULATED COUPLING DEVICE FOR THE BOOM OF A SAILING BOAT

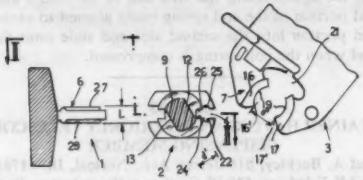
Christian de Rougemont, Paris, France, assignor to Isomat, Saint-Vaast-la-Hougue, France

Filed Jan. 2, 1979, Ser. No. 536

Claims priority, application France, Jan. 11, 1978, 78 00631

Int. Cl.² F16D *3/00*

U.S. Cl. 403—58 **7 Claims**



1. An articulated coupling device comprising two elements, each element defining a fork, and a nut, each fork being pivotally mounted on said nut in perpendicular relation to each other, the nut being provided with a pair of slots for receiving said forks extending about essentially the entire periphery of said nut with each slot being located in one of a pair of essentially perpendicular planes, the bottom of each slot being of a shape to define a pivotal motion guide for the respective fork occupying said slot, each motion guide being provided with two diametrically opposed flat faces, each fork comprising a pair of arms in which at least a portion of each of the oppositely-facing walls of said arms is of the shape of a cylindrical section, and the distance between the free ends of said arms corresponds substantially to the distance between the flat faces of the respective slot with which said arms are engaged to permit said arms to pass across said flat faces, said nut and one of said forks defining interengagement means located on at least one lateral wall of one slot of said nut and on at least one corresponding wall of said one fork, said interengagement means permitting the separation and the interlocking of said nut and one fork in one relative rotational position of said one slot and fork, being adapted to enter into engaged mode after relative rotation between said nut and one fork from said one relative rotational position.

4,219,285

CLAMP-CONNECTOR FOR JOINING THREE TUBULAR MEMBERS

Henry T. Hayashi, 2373 Abreu Rd., Union City, Calif. 94587

Continuation-in-part of Ser. No. 808,044, Jun. 20, 1977, Pat. No. 4,136,984. This application Dec. 14, 1978, Ser. No. 969,307

Int. Cl.² F16B *9/02*

U.S. Cl. 403—188 **2 Claims**

1. A structural clamp-connector comprising:

a. three structural circular elongated tubular members (1), (1'), (1'');

b. a bracket member including:

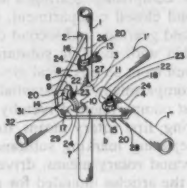
1. a first triangular web member (6) formed with a straight first inner edge (27) a straight first edge (26) positioned at right angles to one another and also formed with a first opening (8) adjoining said straight first edge (26) and a second opening (9) adjoining said straight first inner edge (27),

2. a second triangular web member (7) formed with a straight second inner edge (29) and a straight second edge (28) positioned at right angles to one another and also formed with a third opening (11) adjoining said straight second edge (28) and a fourth opening (10) adjoining said straight second inner edge (29),

3. a first circular elongated curved arc portion (3) for receiving one of said tubular members (1') having a first straight outer edge (31) connected to straight first inner edge (27) of said first web member (6) and also having a second outer edge (32) joined to said straight second inner edge (29) of said second web member (7) so that said first and second webs are connected at right angles to one another.

4. a second circular elongated curved arc portion (2) for receiving another of said straight tubular member (1) and connected along an edge to said first edge (26) of said first web members member (6) and positioned at right angles to said first curved portion (3),

5. a third elongated curved arc portion (4) for receiving still another of said straight tubular members (1'') and connected along an edge to said second edge (28) of said second web member (7) and positioned at right angles to said first and second curved portions (3), (2),



6. said first curved portion (3) is positioned so that structural tubular member (1') intersects structural member (1'') only, second curved portion (2) is positioned so that structural tubular member (1) intersects structural tubular member (1'') only and third curved portion (4) is positioned so that structural tubular member (1'') intersects both structural tubular members (1) and (1'),

c. a plurality of clamp members (13), each including:

1. a strap member (16) formed with a plurality of slits (24) and inserted through said openings (8–11) and encircling said curved portions (2–4) said tubular members (1), (1'), (1'') cradled therein,

2. a housing (20) formed with a U-shaped member for receiving and holding said strap (16),

3. a worm gear (19) journaled for rotation within said housing (20) for engaging said slits (24) in said strap (16) and also formed with a tool engaging head for manual rotation of said worm gear;

d. said clamp members are selected so that a hand tool is capable of pulling said straps (16) in such close fitting frictional engagement around said tubular members (1), (1'), (1'') and said curved portions (2), (3), (4) that said structural tubular members cannot move with respect to said bracket member.

4,219,286

RIGID, TORQUE TRANSMITTING, FLANGED COUPLING

Hans Lindenthal, Heidenheim-Mergelstetten, Fed. Rep. of Germany, assignor to Voith Transmit GmbH, Mulheim an der Ruhr, Fed. Rep. of Germany

Filed Dec. 7, 1978, Ser. No. 967,483

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1977, 2755131

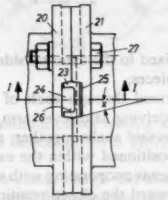
Int. Cl.² F16D *1/00*; F16L *23/00*

U.S. Cl. 403—338 **42 Claims**

1. A coupling for rigidly connecting two coaxial machine parts that are adapted to transmit torque, comprising:

a first and a second coupling half; said first coupling half having a respective first end surface; said second coupling half having a respective second end surface; said first and second end surfaces abutting and being clampable together;

a first groove at said first end surface; a second groove at said second end surface; said first and second grooves extending radially of said coupling and having substantially constant cross-sectional shapes over their radially extending lengths; said first groove having a respective first open top side at the respective said first end surface; said second groove having a respective second open top side at the respective said second end surface; each of said first and second grooves having a closed bottom spaced away from said top side thereof; each of said first and second grooves having respective opposed side walls that join the respective said groove top side and bottom and that generally taper toward each other moving from said top side to said bottom of the respective said groove;



said coupling halves being oriented so that said first and said second open top sides overlie one another, whereby said first and said second grooves together define a common radially extending opening; said opening extending radially of said coupling and said opening having a substantially constant cross-sectional shape over its radially extending length;

a cotter in said opening and extending radially of said coupling; said cotter having a substantially constant cross-sectional shape over its radially extending length; said cotter generally tapers narrower toward said bottom of said grooves, in conformity with the narrowing tapers of said groove walls of said opening in which said cotter is located; said cotter having a cross-section that is slightly larger than the cross-section of said opening when said coupling halves are together;

at least one between of said cotter and said coupling halves in the vicinity of said grooves being elastically deformable, such that when said end surfaces are clamped together, said cotter is squeezed by said walls of said groove and the deformable elements elastically deform.

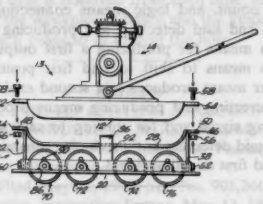
4,219,287

ROLLER ATTACHMENT FOR A VIBRATOR COMPACTOR

Paul Marks, 1313 NW. 97 Ave., Miami, Fla. 33172

Filed May 2, 1979, Ser. No. 35,418
Int. Cl.³ E01C *19/38*
U.S. Cl. 404—117 **10 Claims**

1. A roller attachment assembly for removable attachment to a conventional vibrator compactor of a type having a generally longitudinally extending vibratory bottom plate, the roller attachment comprising a frame including, first, a generally rectangular bottom portion defining a generally rectangular central opening and, second, an upper portion, configurated to nestingly receive the vibrator compactor bottom plate and including attachment means to said bottom portion; a plurality of transversely extending, spaced apart parallel roller means disposed in said rectangular opening with journal means fixed



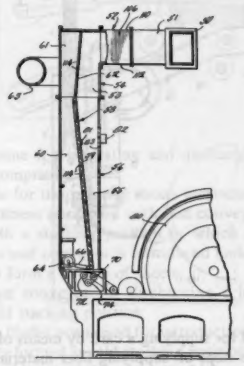
to said frame bottom portion, and means to removably attach said frame relative to the compactor bottom plate.

4,219,288

WEB FORMER HAVING STOP MOTION CONTROL

David Gordemer, Charlotte, N.C., and Sao H. Seing, Duluth, Ga., assignors to Fiber Controls Corporation, Gastonia, N.C.

Filed Mar. 20, 1978, Ser. No. 888,391
Int. Cl.² B65G *53/66*
U.S. Cl. 406—28 **8 Claims**



1. A web former for removing fibers from a conduit carrying a stream of air with textile fibers entrained therein and forming a web of said fibers;

a housing having an interior space;

a perforated plate with at least a portion mounted for oscillatory movement and dividing said interior space into a first chamber and a second chamber;

means defining a passage between said conduit and said first chamber so that air with textile fibers therein passes into said first chamber and the air then into said second chamber through said perforated plate leaving the fibers in said first chamber;

means for oscillating at least a portion of said plate;

a plurality of rollers at the bottom of said first chamber;

means for rotating said rollers to form a web of textile material;

optical means mounted adjacent one of said rollers for detecting rotation of that roller and producing a train of electrical pulses when that roller is rotating;

circuit means for controlling said oscillating means to stop oscillation following cessation of said pulses and to begin oscillation after a predetermined delay following beginning of said pulses, said circuit means including switch means connected to said oscillating means, having a first position supplying power to said oscillating means and a second position interrupting the supply of power to said

oscillating means, means connected to said detecting and producing means for producing a first enabling signal in response to said pulses, counter means for counting said pulses and producing a second enabling signal upon a given count, and logic means connecting said counter means and said detecting and producing means to said switch means for producing a first output causing said switch means to shift to said first position when said counter means produces said second enabling signal and said detecting and producing means produces said first enabling signal and for shifting to said second position when said detecting and producing means ceases producing said first enabling signal.

4,219,289

ARRANGEMENT FOR LOADING A CARD

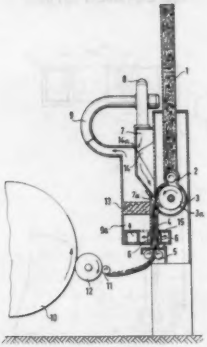
Hermann Trützschler, Monchengladbach, Fed. Rep. of Germany, assignor to Trützschler GmbH & Co. Kg., Monchengladbach, Fed. Rep. of Germany

Filed Jan. 31, 1979, Ser. No. 8,704

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1978, 2804413

Int. Cl.² B65G *53/40*

U.S. Cl. 406—70 **12 Claims**



1. A method for supplying a card by means of a feed chute, comprising the steps of: supplying fiber material from above; compressing the fiber material; removing fiber material from below; delivering fiber material to said card; delivering air flow to fiber material at an upper end of said feed chute; drawing in air exiting from air exit openings at a lower end of said feed chute; feeding air to said upper end of said feed chute through a restriction backing up the air at first and then distributing the air uniformly over the entire width of fiber material present in said feed chute after passing through said restriction, the uniformly distributed air flowing through said fiber material in said chute.

4,219,290

PNEUMATIC CARRIER

Sam W. Golston, 1913 Marshall Rd., Denton, Tex. 76201

Filed May 30, 1978, Ser. No. 910,758

Int. Cl.² B65G *51/06*

U.S. Cl. 406—186 **3 Claims**

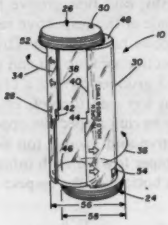
1. A side opening pneumatic carrier for use in a pneumatic tube delivery system, comprising:

two symmetrical shells of concave cross-sectional area, each of said shells having first and second longitudinal edges and first and second ends;

an internal closure piece attached to a first end of each of said shells;

an external closure piece attached to the second end of each of said shells, said external closure piece being dimensioned to be closely received within the pneumatic tube delivery system;

means for pivotally securing said symmetrical shells along a first longitudinal edge of each of said shells, such that said shells are rotatable between a closed position where said second longitudinal edges are adjacent one another and an open position where said second longitudinal edges are separated to provide access to the interior of the pneumatic carrier;



a lever arm affixed to the external side of each of said internal closure pieces;

an opening formed through each of said external closure pieces for receiving said lever arm when said means for securing joins said shells together; and

spring means positioned within the external closure pieces, said spring means cooperating with said lever arms to urge said shells toward the closed position.

4,219,291

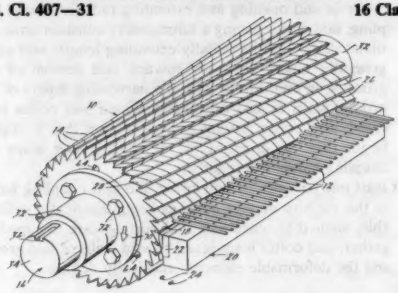
SEGMENTED HELICAL ROTARY CUTTER AND METHOD OF MAKING SAME

James A. Hoeh, 33 N. Seventh St., Sebewaing, Mich. 48759

Filed Mar. 14, 1979, Ser. No. 20,441

Int. Cl.² B26D *1/12*; B21K *21/00*; B02C *1/08*

U.S. Cl. 407—31 **16 Claims**



1. A rotary cutter having a plurality of hard, wear resistant material tipped helical cutting teeth therealong comprising a mandrel, a plurality of cutter discs removably disposed in stacked relationship on said mandrel, each disc comprising a circular member having a plurality of circumferentially spaced cutting teeth extending around the periphery thereof, each cutting tooth of said disc formed with a seat in the tip portion thereof including a mounting face and a hard wear resistant insert fixedly secured in said seat, said insert having a cutting edge describing a true helix, helically oriented coacting means on said mandrel and each said disc for rotationally positioning each said disc relative to the adjacent said disc to align the helical cutting edges thereon to define a plurality of segmented substantially continuous true geometrical helical cutting edges extending the entire length of the stacked said discs, and means for removably securing said discs on said mandrel in face-to-face abutting relationship.

4,219,292
ROTARY HELICAL MILLING CUTTER WITH REPLACEABLE CUTTER BIT ELEMENTS

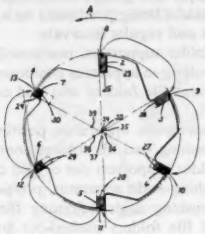
Friedrich Hoffmann, Tübingen; Werner Gräfe, Reutlingen; Siegfried Deiss, Tübingen; and Willy Schlotterer, Nehren, all of Fed. Rep. of Germany, assignors to Montanwerke Walter GmbH, Tübingen, Fed. Rep. of Germany

Filed Mar. 7, 1979, Ser. No. 18,265

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1978, 2811680

Int. Cl.[2] B26D *1/12*

U.S. Cl. 407—63 **10 Claims**



1. Rotary helical milling cutter having an essentially cylindrical body (1) with helical grooves (2–7) extending in axial direction;

helical, replaceable cutter bits (8–13) located in the groove;

and clamp means (14, 16) securing the cutter bits in said grooves,

wherein, in accordance with the invention,

the helix axis (34–39) of at least one of the helical grooves (2–7) is radially offset from the center of rotation (32) of the cylindrical body (1) in a direction towards the associated groove.

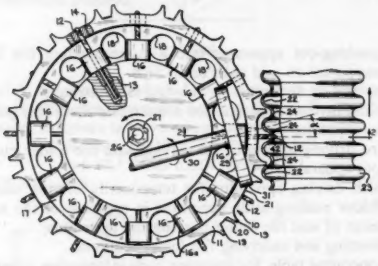
4,219,293
WORKPIECE PERFORATING MACHINE

Anthony J. Licht, 329 Custer, Sandusky, Mich. 48471

Filed Sep. 15, 1978, Ser. No. 942,674

Int. Cl.[3] B23B *35/00, 39/20, 41/00*

U.S. Cl. 408—1 R **12 Claims**



12. The method of drilling a hole in a workpiece which comprises:

(a) providing a guide wheel which rotates on a central axis with a peripheral surface positioned so as to be in surface contact with the workpiece, the guide wheel having at least one drill mounted on a radial axis from the central axis of the guide wheel such that the drill is rotatable and extendable into and retractable from the workpiece from the peripheral surface of the guide wheel and the drills having cylindrically surfaced driven bushings fixedly mounted around a radial axis of each drill;

(b) providing a rotatable powered drive disc with an axis of rotation positioned transversely to said drill axis so ythat the disc periodically frictionally engages each said bushing to rotate and axially extend each said drill with respect to said guide wheel into the workpiece to drill said workpiece and whereby upon the rotation of the guide wheel each said drill is removed from each hole; and

(c) moving the workpiece surface and the guide wheel relative to each other so as to drill the hole.

4,219,294
MACHINE FOR SEPARATING AND DISCHARGING PRODUCTS IN SHEET FORM

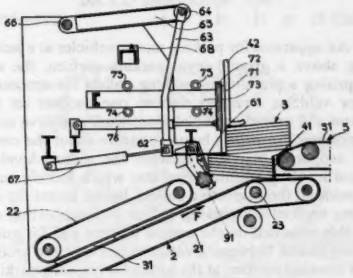
Bernard Capdeboscq, St Just Chaleyssin, France, assignor to S.A. Martin, Villeurbanne, France

Filed May 11, 1978, Ser. No. 905,366

Claims priority, application France, May 13, 1977, 77 14638

Int. Cl.[3] B65G *57/30*

U.S. Cl. 414—46 **2 Claims**



1. A machine for separating and discharging products in sheet form comprising:

a conveyor for transporting sheets individually;

a stop abutment associated with said conveyor and defining therewith a stacking position in which each successive sheet on said conveyor is introduced under the preceding sheet to form a bundle of sheets;

a discharge conveyor for discharging a bundle of sheets from said stacking position;

separating blades positioned for introduction below a bundle of sheets formed in said stacking position, means for raising said blades at the rate at which new sheets arrive under said bundle;

a pusher comprising substantially vertical bars arranged opposite said blades;

means for moving said pusher bars to push a bundle on said separating blades onto said discharge conveyor;

a roller provided with peripheral cogs;

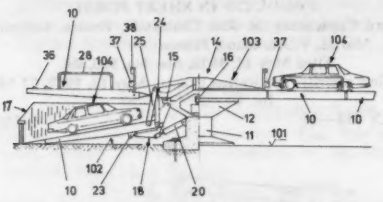
means mounting said roller so that the upstream edge of the lowest sheet in said stacking position rests thereagainst; and

means for rotating said roller to raise said edge of said sheet to a position at the bottom of the bundle whereupon the bundle is supported at the lower upstream edge thereof by said roller, said conveyor including an ascending portion and a substantially horizontal portion, said roller being disposed above said ascending portion to support the upstream edge of the lowest sheet of the bundle while the downstream edge of the lowest sheet rests on said substantially horizontal portion of the conveyor, said conveyor comprising a plurality of laterally spaced belts, said blades being movable between the spaced belts, said roller including axially spaced and aligned roller elements disposed above said belts, said vertical bars of said pusher being positioned to be contacted by said blades when the latter are raised whereupon said bars are moved to push the bundle on said blades onto said discharge conveyor.

4,219,295
APPARATUS FOR PARKING MOTOR VEHICLES

Ernst E. Kühner, 8 Fere-Champenoise-Strasse 8, D-7501 Bruchhausen, Fed. Rep. of Germany

Filed Mar. 3, 1978, Ser. No. 883,154
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1977, 2709203
Int. Cl.[2] F04H 6/06
U.S. Cl. 414—242 5 Claims



1. An apparatus for parking motor vehicles at a second level lying above a ground level parking surface, the apparatus comprising a plurality of parking pallets for accommodating motor vehicles arranged next to one another on a central column and extending radially outwardly relative to the central column, the pallets being rotatable about the central column and being movable between the second level and the ground level by a lifting apparatus which loosely engages an underside of the respective pallets, linked means for interconnecting each of the parking pallets to a supporting structure rotatably mounted on the central column and for guiding the parking pallets between a raised position at the second level and a lowered position at the ground level, each parking pallet being slightly inclined and displaced inwards at the lowered position relative to the raised position, and means for locking each of the parking pallets in the raised position on the supporting structure, characterized in that said locking means includes at least one hook having an opening, the at least one hook is disposed on one of the parking pallets and the supporting structure, a countermember disposed on the other of said parking pallets and supporting structure and cooperating with said hook opening for effecting a locking of the parking pallet in a generally horizontal raised position, means are provided for mounting said hook and said countermember so as to enable the countermember to be moved into and out of the hook opening by the raising and lowering movement of the respective parking pallets, a pawl is pivotally mounted on the hook for controlling access into the hook opening, means are provided for normally urging the pawl into a position at which the pawl is clear of the hook opening, stop means are provided for defining the position at which the pawl is clear of the hook opening, and in that the pawl is mounted on the hook so that, upon raising the parking pallet, the countermember is moved out of the hook opening and cooperates with the pawl so as to raise the pawl from said position defined by said stop means thereby effecting a closing of the hook opening by the pawl through an engagement of the countermember with the pawl during a subsequent lowering movement of the parking pallet.

4,219,296
AUTOMATIC STORAGE AND RETRIEVAL APPARATUS FOR INDIVIDUAL FILE FOLDERS

Tatsuo Fujii; Yoichi Tabata; Nobuyuki Oku, all of Osaka, and Yoshiaki Shishido, Shiga, all of Japan, assignors to Itoki Kosakusho Co., Ltd., Osaka, Japan

Filed Mar. 10, 1978, Ser. No. 885,178
Claims priority, application Japan, Mar. 15, 1977, 52-27572
Int. Cl.[3] B65G 1/12
U.S. Cl. 414—273 8 Claims

1. Automatic storage and retrieval apparatus, comprising a shelf unit for storing thin objects, such as file folders, said shelf unit, equipped at regular intervals in the horizontal direction with file folder supports, said file folder supports providing vertical support for said file folders;

a movable carriage adapted to move along a face of said shelf unit;

code marks, positioned along said shelf unit face, each of said code marks identifying a group of file folders, said file folder group consisting of N file folder supports adjoining each other in the horizontal direction;

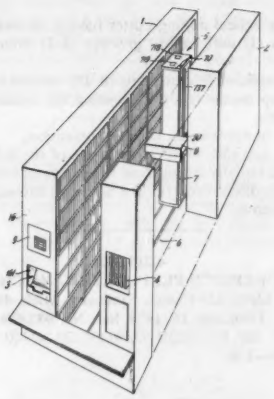
scanning apparatus for reading said code marks said scanning apparatus being synchronized with the movement of said carriage,

individual marks identifying one of said file folder supporters included in said group of file folder supporters said individual marks being positioned on a front face of said shelf unit at said regular intervals;

carriage file folder supporters, positioned on said carriage, file folder pulling-in apparatus positioned on said carriage for pulling said file folders into said carriage file folder supporters,

file folder pushing-out apparatus, positioned on said carriage, for pushing said file folders contained in said carriage file folder supporters out of said carriage;

file folder pushing-aside apparatus, positioned on said carriage, for pushing aside adjoining file folders and for placing said file folders pushed-out by said file folder



pushing-out apparatus into a corresponding file folder supporter on said shelf unit;

first driving apparatus for moving said carriage,

second driving apparatus for driving said file folder pulling-in apparatus;

third driving apparatus for driving said file folder pushing out apparatus,

fourth driving apparatus for temporarily driving said file folder pushing-aside apparatus in response to the movement of said file folder pushing out apparatus;

delivering and receiving file folder sections;

an operation table, for inputting code information representing information concerning a designated file folder location, said information including "store" and "retrieve" commands;

a first control circuit for controlling said first driving apparatus to transport said carriage from said receiving section to the location of said designated file folder, said designated file folder being supported by a file folder supporter, said first control circuit being responsive to said "retrieve" command for controlling said drive apparatus to transport said carriage from the location of the designated file folder, being supported by a file folder supporter, to said delivering section,

and a second control circuit for controlling and driving said

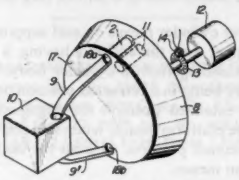
second driving apparatus and said third driving apparatus to pull-in and push-out said file folder in response to said "store" and "retrieve" commands received from said first control circuit.

4,219,297

APPARATUS WITH ROTARY INCLINED STORAGE CELLS

Kunitsugu Tsukui, Chigasaki, Japan, assignor to Hitachi, Ltd., Japan

Filed Oct. 16, 1978, Ser. No. 951,886
Claims priority, application Japan, Oct. 19, 1977, 52-124497
Int. Cl.[2] B65G *1/00*; E04H *6/06*
U.S. Cl. 414—276 **3 Claims**



1. An article storage apparatus comprising:

article storage means including along the circumference thereof a plurality of inclined cells for storing articles therein,

a disk-like shield plate formed with an opening therein, and

driving-positioning means operable to rotate said storage means and said shield plate to bring one of said cells storing therein a desirable article to an uppermost position and to bring said opening in said shield plate to a position substantially aligned with said one cell when said desirable article is to be taken out,

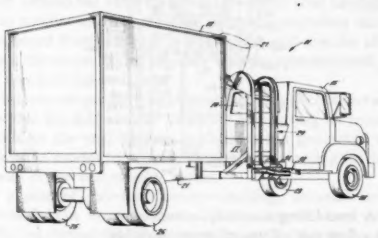
said driving-positioning means being operable also to rotate said storage means and said shield plate to bring one of said cells to a lowermost position and to bring said opening in said shield plate to a position substantially aligned with the latter one cell when an article is to be received in the latter one cell, whereby said desirable article can be taken out from said cell in the uppermost position and said article to be received can be stored in said one cell in the lowermost position.

4,219,298

RAPID RAIL

Marcel G. Stragier; Theodore J. Peterson, both of Scottsdale; John W. Bingman, Mesa, and Julius A. Barker, Scottsdale, all of Ariz., assignors to Government Innovators, Phoenix, Ariz.

Filed Sep. 13, 1974, Ser. No. 505,765
Int. Cl.[3] B65G *65/04*; B65F *3/02*
U.S. Cl. 414—409 **1 Claim**



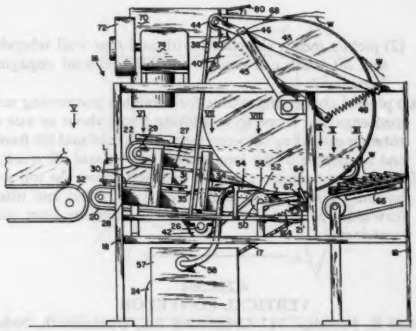
1. In a trash collection system having a frame attached to the side of a trash collection vehicle and including a pair of parallel guide rails each extending upwardly in a substantially vertical plane and having curved portions at the top thereof, said system including a carriage mounted on said guide rails for movement therealong, the apparatus comprising: track means positioned parallel to said guide rails; a pair of gripping arms secured to said carriage, each of said arms pivotable about a horizontal axis for movement to a vertical plane and pivotable about a vertical axis for movement to and from each other for gripping a trash container; means secured to said frame for laterally extending said guide rails, carriage, and gripping arms mounted thereon outwardly from said vehicle for positioning said gripping arms with respect to a trash container; and a motor mounted on said carriage for movement therewith and having means engaging said track means for driving said carriage along said guide rails.

4,219,299

APPARATUS FOR UNWRAPPING BREAD

James C. Watson, Six Crestview Ave., Westboro, Mass. 01581

Filed Aug. 2, 1978, Ser. No. 930,316
Int. Cl.[2] B65G *65/04*
U.S. Cl. 414—412 **15 Claims**



1. Apparatus for removing the wrapper from a wrapped loaf of bread, the apparatus comprising:

(a) means for conveying a wrapped loaf of bread,

(b) means for vertically compressing the loaf of bread as it is being conveyed so that an excess of wrapper material is formed on each side of the loaf,

(c) means for clamping the excess wrapper material on each side of the loaf while stretching the wrapper taut transversely during conveyance of the compressed loaf and for releasing the wrapper after removal of the bread therefrom,

(d) a cutter for slitting the stretched wrapper at the bottom of the wrapped loaf while the loaf is conveyed, and

(e) means for creating relative motion between the bread and cut wrapper to separate the wrapper from the bread.

4,219,300

MATERIAL HANDLING APPARATUS

Joseph C. McMillan, Rte. 4, Box 511, Greensboro, N.C. 27406

Filed Aug. 21, 1978, Ser. No. 935,595
Int. Cl.[3] B65G *65/23*
U.S. Cl. 414—420 **6 Claims**

1. A material handling apparatus for use with a lift truck in transporting and dumping containers of the type including front, rear and sidewalls and an open top, said material handling apparatus comprising:

(A) a load engaging frame including:

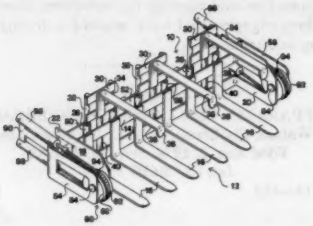
(1) a rear wall and a plurality of horizontally spaced lower tynes extending forwardly from the lower edge thereof;

(2) a plurality of horizontally spaced upper tynes extending forwardly in vertically spaced, parallel relation to said lower tynes, said upper tynes extending forwardly

a distance spanning the open top of the container and including a downwardly depending lip at the free end thereof, said lip over-lying and supporting the front wall of the container;

(B) a lifting frame including:

(1) a rear wall having a forwardly extending side wall depending from the opposite ends thereof, the lateral space between said side walls being greater than the length of said load engaging frame;



(2) pickup means associated with said rear wall whereby said lift truck can engage and lift said load engaging frame;

(C) pivotal connecting means for rotatably connecting said load engaging frame to said lifting frame about an axis of rotation extending between the side walls of said lift frame and transverse to the longitudinal axis of said lift truck;

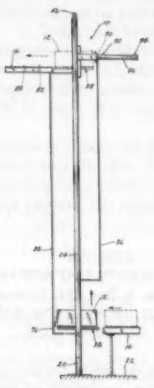
(D) whereby containers may be engaged across the top and bottom by said upper and lower tynes, lifted and tilted forwardly at least 90° to empty the contents from said containers.

4,219,301

VERTICAL CONVEYOR

Burton R. Freeman, 917 Greenwood Rd., Plattsmouth, Nebr. 68048

Filed Jan. 16, 1979, Ser. No. 3,875
Int. Cl.[2] B65G *43/08, 47/64, 47/57*
U.S. Cl. 414—592 **5 Claims**



1. A vertical conveyor comprising,

an upstanding support means having upper and lower ends,

a platform means vertically movably mounted on said support means and movable between a lower first position and an upper second position, said platform means adapted to receive an object to be conveyed while positioned in its said first position,

an elongated first power cylinder means positioned adjacent said support means, said first power cylinder means having a movable piston positioned therein, a first cable means secured to said piston and extending therefrom through the one end of said first power cylinder means and thence towards said platform means and being operatively connected to said platform means whereby movement of said piston in said first power cylinder means in one direction will cause said platform means to be raised towards its second position, a second cable means secured to said piston and extending therefrom through the other end of said first power cylinder means and thence towards said platform means and being operatively connected to said platform means whereby movement of said piston in said first power cylinder means in a second direction will cause said platform means to be lowered towards its first position,

a second power cylinder means on said support means adjacent the upper end thereof and having a push-off rod movably extending from a cylinder body, said push-off rod normally being in a retracted position but being movable to an extended position for engagement with the object on the platform means, when said platform means is in its said second position, to push the said object from said platform means,

power means supplying power to said power cylinders,

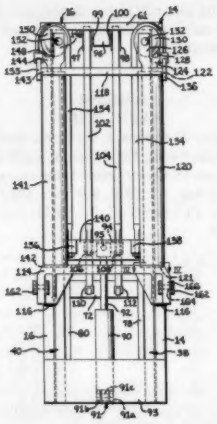
and control means operatively connected to said power means to initially move said platform means from its said first position to its said second position after the said object has been positioned thereon, thence extend said push-off rod to push the object from said platform means, thence retract said push-off rod, and thence lower said platform means to its said first position.

4,219,302

CYLINDER ARRANGEMENT FOR RAISING A CARRIAGE AND UPRIGHTS OF A MAST

Edward V. Leskovec, Eastlake, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

Filed Feb. 13, 1978, Ser. No. 877,052
Int. Cl.[2] B66B *9/20*
U.S. Cl. 414—635 **14 Claims**



7. A load-lifting assembly, comprising:

(a) a first pair of spaced-apart uprights;

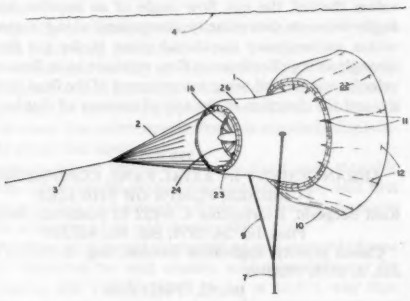
(b) a second pair of spaced-apart uprights being movable in relation to said first pair of uprights;

(c) a load carrying carriage;

(d) means for moving said carriage in relation to and without movement of said second pair of uprights, including

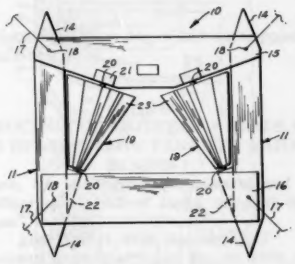
(i) a cross-member fixedly connected to each of said uprights of said second pair,
(ii) a first sheave connected to said cross-member, and
(iii) means for lifting said carriage and being movable about said first sheave, and
(e) means for moving said second pair of uprights relative to said first pair of uprights, including
(i) first and second cylinder means for controlling movement of said second pair of uprights, respectively,
(ii) second and third sheaves connected, respectively, to said first and second cylinder means; and
(iii) first and second chains connected, respectively, to said first and second cylinder means and to said uprights of said second pair, said first and second chains extending about said second and third sheaves.

4,219,303
SUBMARINE TURBINE POWER PLANT
William J. Mouton, Jr., Box 10515, New Orleans, La. 70181, and David F. Thompson, 2540 Green St., Chester, Pa. 19013
Filed Oct. 27, 1977, Ser. No. 846,069
Int. Cl.[2] F01D *1/26*; F03D *1/02*
U.S. Cl. 415—7 **2 Claims**



1. An electrical power plant for the recovery of hydrodynamic energy from a free-flowing current of water, comprising
(1) an annular nozzle for intercepting a portion of the current and permitting the remainder of the current to by-pass the nozzle,
(2) the nozzle having an inner wall forming a through passageway for the intercepted portion, the passageway converging from an entrance end to a vena contracta, then diverging to a discharge end,
(3) the nozzle having an outside by-pass surface extending from the entrance end to the discharge end, the inner wall and the outside surface together forming an annular chamber around the vena contracta, the inner wall having
(4) an annular recess at the vena contracta extending radially outward from the inner wall into the said annular chamber, the recess having an outer wall, an upstream wall, and a downstream wall, and
(5) at least one pressure-tight generator chamber constructed within the said annular chamber, and having an entrance lock in the said by-pass surface, and a generator shaft passage extending radially inward and piercing the outer wall of the said annular recess.
(6) a pair of axle-less, counter-rotating, co-axial turbine wheels, (an upstream wheel and a downstream wheel) having shroud-ring rims supported within the said annular recess upon
(7) bearing means carried by at least one of the downstream, outer, and upstream walls of the said recess, the bearing means supporting the turbine wheels for free rotation against radial forces, gravity, and axial fluid forces, and
(8) bearing means between the wheels separating them from one another,
(9) the said shroud-ring rims having inner diametric shapes for smooth flow of the water currents through the vena contracta and the wheels, and
(10) the rim of the upstream wheel having a bevelled downstream face, the rim of the downstream wheel having a bevelled upstream face,
(11) a bevelled friction drive roller carried on a generator shaft in the generator shaft passageway,
(12) the bevels of the said rims and of the friction-drive roller being designed to cooperate for driving engagement of the roller by the two bevelled rims.

4,219,304
WATER TURBINE
Samuel S. Schock, 6760 Norcross Rd., R.R. #4, Duncan, British Columbia V9L 3W8, Canada
Filed Sep. 8, 1978, Ser. No. 940,774
Int. Cl.[2] F01D *25/28*
U.S. Cl. 415—7 **2 Claims**



1. A water turbine, comprising, in combination, a pair of parallel, spaced-apart pontoons, providing flotation means for a pair of rotors of conical configuration, which are partly submerged in a body of flowing water, and platform means is secured to said pair of parallel, spaced-apart pontoons, for supporting bearing support members of said pair of rotors; said parallel, spaced-apart pontoons include ballast means secured fixedly in the bottom thereof, for stability upon the surface of water, and the bottom surface of said platform means is fixedly secured to the top surface of said pair of parallel, spaced-apart pontoons; anchor lines being secured by suitable fastener means to the end portions of said platform means, which are a pair, that are parallel spaced-apart, and said bearing support members of said rotors are secured, both, to a side of said parallel, spaced-apart pontoons and to one of said platform means, and the ends of the shafts of said rotors are journaled within said bearing support members.

4,219,305
DIFFUSER CONTROL
Gordon L. Mount, W. Monroe, and Howard W. Kirtland, N. Syracuse, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Dec. 26, 1978, Ser. No. 973,405
Int. Cl.[2] F04D *27/02, 29/46*
U.S. Cl. 415—13 **12 Claims**

1. A diffuser control for controlling vapor flow through a diffuser passage comprising:
an annular recess defined by a housing of the passage and in communication therewith;
diffuser restriction means supported for movement within the annular recess and the diffuser passage between a full throttling position, wherein the restriction means throttles vapor flow through the diffuser passage, and an open

position for permitting a substantially free flow of vapor through the diffuser passage;

first urging means supported by the housing for urging the diffuser restriction means toward the full throttling position;

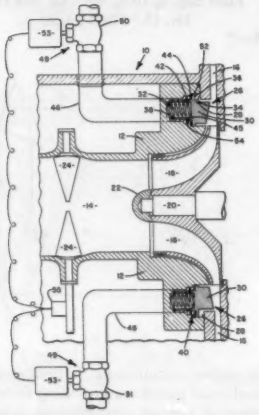
first stop means for limiting movement of the restriction means at the full throttling position;

second urging means supported by the housing for urging the diffuser restriction means toward an intermediate throttling position located between the open and full throttling positions;

force limiting means for limiting the force exerted by the second urging means on the diffuser restriction means at the intermediate throttling position;

conduit means for connecting the annular recess to a low pressure source;

first sealing means for retarding vapor flow from a higher pressure side of the diffuser restriction means to a lower



pressure side thereof when the restriction means is in the open position;

second sealing means for retarding vapor flow from a higher pressure side of the diffuser restriction means to a lower pressure side thereof when the restriction means is in the intermediate throttling position; and

valve means for regulating vapor flow through the conduit means and including a first position for maintaining a low pressure in the annular recess and a first pressure difference across the diffuser restriction means for maintaining the restriction means in the open position, a second position for maintaining an intermediate pressure in the annular recess and a second pressure difference across the diffuser restriction means for maintaining the restriction means in the intermediate throttling position, and a third position for maintaining a high pressure in the annular recess wherein the first urging means maintains the restriction means in the full throttling position.

4,219,306

MULTISTAGE TURBOCOMPRESSOR WITH MULTIPLE SHAFTS

Yoshikazu Fujino, Kobe, and Yoshiaki Daido, Akashi, both of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

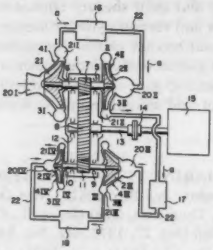
Filed Mar. 2, 1979, Ser. No. 16,737

Claims priority, application Japan, Mar. 7, 1978, 53-26120

Int. Cl.³ F04D *25/16*

U.S. Cl. 415—62 **6 Claims**

1. A multistage turbocompressor comprising: a plurality of rotary compressors for compressing a gas provided with respective impellers and connected by gas conducting means to constitute a single multistage combination of the compressors in successive compression stages; a plurality of separate rotating shafts each supporting a plurality of the impellers of consecutive stages; and motive power means for driving the rotating shafts, an impeller of a preceding stage among the impellers on each shaft having an exit flow angle which is less than that of the impeller of the succeeding stage thereby to cause the



specific speeds of all impellers to be at the respective optimal values thereof, the exit flow angle of an impeller being the angle between the velocity component along a streamline within an imaginary meridional plane in the gas flow path through an impeller from its flow entrance to its flow exit, the velocity component being a component of the flow exit velocity, and the direction of the axis of rotation of that impeller.

4,219,307

ARRANGEMENT IN AXIAL FANS, COMPRESSORS, TURBINES, PUMPS OR THE LIKE

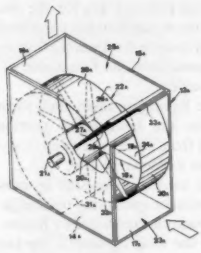
Knut Bergdahl, Kvartsgränd 4, S-852 52 Sundsvall, Sweden

Filed Jul. 24, 1978, Ser. No. 927,509

Claims priority, application Sweden, Aug. 2, 1977, 7708818; Jan. 3, 1978, 7800049

Int. Cl.² F04D *1/04*

U.S. Cl. 415—182 **13 Claims**

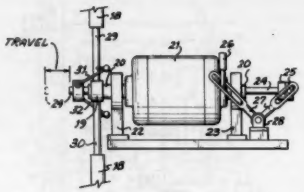


1. An arrangement in fans, compressors, turbines, pumps and the like, said arrangement comprising at least one wheel having vanes of the axial flow type, said wheel being arranged in a housing having at least one inlet and one outlet opening and formed by a mantle provided at least partially about and closely adjacent to the periphery of the wheel and at least two side walls provided on opposite sides of the wheel, least the side wall located on the downstream side of the wheel being at least partially spaced from the adjacent axial sides of the vanes of the wheel, said housing having at a circumferential location thereof a restriction forming a narrowed passage for the vanes of the wheel, said narrowed passage having a shape closely conforming to the shape of the vanes so as to form a fluid barrier within the housing minimizing fluid flow through the passage while allowing close passage of the vanes of the wheel.

4,219,308
TORQUE CONTROL SYSTEM FOR WIND ENERGY CONVERSION DEVICES

Gerald W. Bottrell, La Crescenta, Calif., assignor to Ventus Energy Corp., Covina, Calif.

Filed Nov. 21, 1977, Ser. No. 853,395
Int. Cl.[2] F03D 7/04
U.S. Cl. 416—43 3 Claims



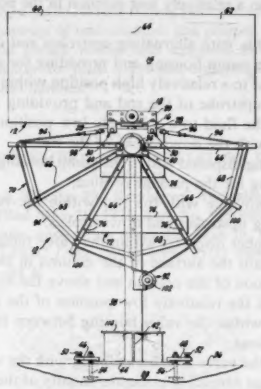
1. A wind energy conversion system comprising:
a wind turbine for converting wind energy into a wind turbine torque, said wind turbine having variable pitch blades;
an essentially horizontally disposed first shaft, one end of which is drivenly connected to said wind turbine;
a driven machine having an input shaft which is drivenly connected to said first shaft and having a rotatable frame;
a first means for rotatably supporting said driven machine in such a way that said rotatable frame is angularly displaceable about said input shaft;
a chassis to which said first means is fixed; said rotatable frame being spaced away from said chassis by said first means so that said rotatable frame is angularly displaceable with respect to said chassis; and
a second means drivenly connected to said rotatable frame and supported by said chassis, said second means for adjusting said variable pitch blades in such a way that, when said system is in use, wind turbine torque produces, in balance thereto, an angular displacement of said rotatable frame which in turn causes adjustment of said variable pitch blades in such a way that wind turbine torque is controlled.

4,219,309
WIND POWER GENERATOR

Franklin Ross, 3998 Lake Mead Dr., Fremont, Calif. 94536

Filed Jun. 19, 1978, Ser. No. 916,503
Int. Cl.[2] F03D 5/06
U.S. Cl. 416—80 9 Claims

1. A wind power generator comprising:
a. means for opposing the force of a wind, said means being mounted to a first pivot and extending radially therefrom, said wind opposing means having a first portion and a second portion, said wind opposing means being mounted to a second pivot at the juncture of said first and second portions of said wind opposing means;
b. means for at least counterweighting said wind opposing means, said counterweighting means being mounted to said first pivot and extending radially therefrom such that the axis of said first pivot is interposed said wind force opposing means and said means for at least counterweighting said wind opposing means, said means for at least counterweighting said wind opposing means comprising a first weight selectively fixed effectively along the axis of said second pivot;

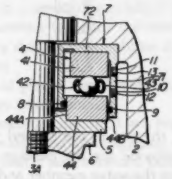


c. means for aiding the turning of said wind opposing means about said first pivot.

4,219,310
CONSTRUCTION OF ADJUSTABLE BLADE SHAFT BEARING IN AXIAL-FLOW FAN WITH ADJUSTABLE BLADES

Akira Takata, Aza & Togakushi, Amimachi, and Kazuhiko Ozaki, Minorimachi, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 17, 1979, Ser. No. 4,223
Claims priority, application Japan, Jan. 18, 1978, 53-3280
Int. Cl.[2] F04D 29/36
U.S. Cl. 416—146 A 5 Claims



1. A construction of an adjustable blade shaft bearing in an axial-flow fan with adjustable blades of the type wherein an outer ring is mounted on an impeller hub while an inner ring is mounted in such a way as to rotate in unison with an adjustable blade shaft wherein an annular cover which has a U-shaped cross-sectional configuration, a bottom wall which rides over the outer surface of said outer ring and side walls which are in opposed relationship with the inner radial surfaces and outer radial surfaces of said rings so as to cover them is provided; liquid sealing means are disposed between the inner peripheral surfaces adjacent to the open end of said annular cover and the inner and outer radial surfaces of said inner ring; and a lubricating oil with a low viscosity is filled in said annular cover.

4,219,311
PUMP ASSEMBLY

Donald J. Simon, Midland, Tex., assignor to Sargent Industries, Inc., Los Angeles, Calif.

Filed Aug. 29, 1974, Ser. No. 501,495
Int. Cl.[2] F04B 3/00, 5/00
U.S. Cl. 417—260 6 Claims

1. A valve combination adapted for use in a subterranean

pump including a pump housing and supporting a column of fluid movable to a relatively high position within the housing and movable to a relatively low position in the housing, comprising:

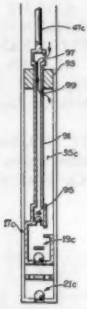
a rod movable with alternating upstrokes and downstrokes within the pump housing and providing for a movement of the fluid to a relatively high position within the housing with the upstroke of the rod and providing for a movement of the fluid to a relatively low position within the housing with the downstroke of the rod;

a valve tubing disposed within the pump housing and having an opening for the passage of fluid;

a plunger movable with the rod within the tubing in the alternating upstrokes and downstrokes;

a valve member disposed within the valve tubing at a position beneath the surface of the column in the relatively high position of the column and above the surface of the column in the relatively low position of the column and movable within the valve housing between first and second positions;

portions of the valve member defining with the valve tubing a valve seat extending circumferentially of the rod within the housing and defining a closed relationship with the valve tubing and the rod in the first position of the valve member and defining an open relationship with the valve



member and the rod in the second position of the valve member to provide for the passage of fluid through the space between the valve member and the valve tubing and through the opening in the valve housing, the valve member being constructed to be in the first position during substantially all of the downstroke of the rod and to be in the second position during substantially all of the upstroke of the rod; and

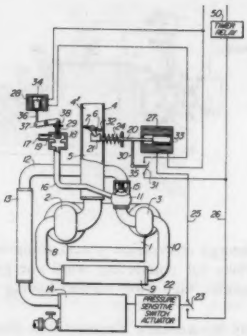
a valve element formed on the rod and disposed circumferentially of the valve seat and movable with the rod between first and second positions and the rod having a closed relationship with the valve member at all positions of the rod during the downstroke of the rod except positions approaching the bottom position of the rod and the valve element of the rod being movable into an open relationship with the valve member at the positions approaching the bottom position of the rod and for substantially the remainder of the downward movement of the rod to provide for a movement of the fluid downwardly from a position above the valve member to a position below the valve member during such open relationship between the valve element and the valve member and to provide for a passage of fluid upwardly from a position below the valve member to positions above the valve member during substantially all of the upward movement of the rod.

4,219,312

VOLUME CONTROL SYSTEM FOR COMPRESSOR UNIT

Hidetomo Mori, and Shingo Ishizawa, both of Ebina, Japan, assignors to Hitachi, Ltd., Japan

Filed Oct. 20, 1978, Ser. No. 952,986
Int. Cl.[2] F04B *49/02, 49/06, 49/08*
U.S. Cl. 417—295 **5 Claims**



1. In a compressor unit of the type that includes at least one rotary displacement compressor, an intake pipe, a throttle valve in said intake pipe, a tank for receiving and accumulating compressed gas, a delivery pipe extending between said compressor and said tank, a check valve in said delivery pipe, a pressure relief pipe connected at one end to said delivery pipe between said compressor and said check valve, and a pressure relief valve provided in said pressure relief pipe, an improved volume control system which comprises:

a first spring means operative to bias said throttle valve toward its closed position, a first solenoid means operative when energized to move said throttle valve to its fully open position against said first spring means, link means between said throttle valve and said first solenoid means, a second spring means operative to bias said pressure relief valve toward its fully open position, a second solenoid means operative when energized to move said pressure relief valve to its closed position against said second spring means, an electric circuit for said second solenoid, an electric switch in said electric circuit, and a switch actuator means responsive to changes of the positions of said throttle valve to actuate said electric switch, the arrangement being such that, when said throttle valve is moved to its closed position, said pressure relief valve is opened, and such that, when said throttle valve is moved to its open position, said pressure relief valve is closed.

4,219,313

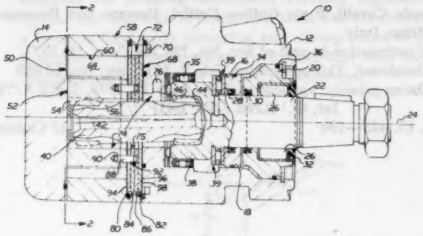
COMMUTATOR VALVE CONSTRUCTION

Laurence L. Miller, West Lafayette, and Terry E. Hilt, Lafayette, both of Ind., assignors to TRW Inc., Cleveland, Ohio

Filed Jul. 28, 1978, Ser. No. 928,738
Int. Cl.[2] F03C *3/00;* F04C *1/02, 15/02;* F16K *37/00*
U.S. Cl. 418—2 **14 Claims**

1. A commutator valve assembly for directing fluid between expansible and contractible fluid pockets and the high and low pressure ports of a hydraulic device, said valve assembly comprising a plurality of plate members adapted to be fixedly secured together, said plurality of plate members including a first end plate, a second end plate and a plurality of intermediate plates disposed therebetween, said first end plate including first and second arrays of fluid passageways for communicating with the expansible and contractible fluid pockets, said intermediate plates being disposable in either a first or a second alignment between said first and second end plates, said plural-

ity of intermediate plates forming a series of flow passages formed in a pattern for communicating the first array of fluid passageways with the high pressure port and the second array of fluid passageways with the low pressure port when the intermediate plates are in said



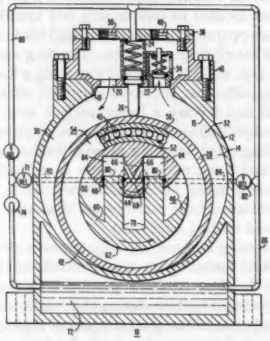
second alignment, the flow passages in each of said intermediate plates extending therethrough from one end surface to the other end surface, the flow passages in the end surfaces of each intermediate plate forming patterns which are mirror images of each other, and the positions of said intermediate plates relative to said first end plate in said first position being a reversal of the positions of said intermediate plates relative to said first end plate in said second position.

4,219,314

ROLLING PISTON ROTARY COMPRESSOR

Dennis M. Haggerty, Bloomington, Minn., assignor to Thermo King Corporation, Minneapolis, Minn.

Filed Jan. 22, 1979, Ser. No. 5,124
Int. Cl.[2] F04C *17/02, 29/10*
U.S. Cl. 418—24 **5 Claims**



1. In a rotary compressor having a casing defining a generally cylindrical chamber, a rolling piston within said chamber, and crank means for driving said piston, said crank means attached to a drive shaft and comprising: a first crank member integral with said drive shaft in engagement with an arcuate portion of the internal cylindrical face of said rolling piston; a spatially separated second crank member in engagement with a diametrically opposed arcuate portion of said cylindrical face; and wherein said first crank member includes a hydraulic cylinder means in fluid flow communication with pressurized fluid through a fluid passage in said crankshaft and said second crank member defines hydraulic piston means projecting across said spatial separation and into said cylinder means; and, means for adjusting the fluid pressure on said fluid to said cylinder means to vary the force separating said crank members;

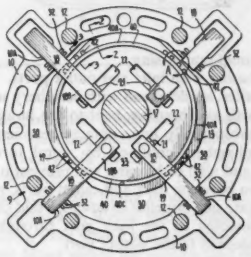
wherein said pressure on said fluid in said cylinder means maintains said spatial separation under normal compressor operations to maintain said rolling piston in rolling contact with the interior of said chamber and permits retraction of said piston means within said cylinder means for said rolling piston to pass over non-compressible material within said chamber.

4,219,315

SEALING MEMBER FOR ORBITAL OR ROTARY MOTORS

Tony R. Sarich, 9 Halse Pl., Karrinyup, Australia

Filed May 25, 1978, Ser. No. 909,993
Claims priority, application Australia, May 26, 1977, PC0239
Int. Cl.[3] F01C *1/00, 19/00;* F03C *2/00;* F04C *2/00*
U.S. Cl. 418—61 R **6 Claims**



1. An orbital or rotary engine or pump comprising:

a housing having a shaft journalled therein;

a piston member within said housing and eccentrically mounted on said shaft for orbital movement relative to said housing in response to relative rotation between said housing and said shaft about the axis of said shaft;

a plurality of vanes in cooperating relation with said housing and said piston member to define therebetween a plurality of work chambers that vary in volume in response to said orbital movement;

said housing and said piston member having opposed radial faces in respective radial planes;

an annular sealing member mounted in a recess in said radial face of said piston member and engaging said radial face of said housing to form a seal between said radial faces;

said sealing member having a radial first face engaging said radial face of said housing, a non-radial second face engaging a radially inner wall of said recess in said piston member and a third face inclined with respect to both said first and second faces;

each said vane having a vane leg extending radially inward from the periphery of said piston member, said vane leg having a radial face directed towards said radial face of said piston member and engaging said sealing member;

a plurality of seal elements mounted in at least one recess in said radial face of said piston member between the periphery of said piston member and said sealing member;

each said seal element having a radial first face to engage said radial face of said vane leg, a non-radial second face engaging said piston member and a third face inclined with respect to both said first and second faces of said seal element;

means acting on said third face of each said seal element for urging said first and second faces of said seal element into engagement with said vane leg and said piston member, respectively; and

said seal elements being circumferentially spaced so that the said radial face of each said vane leg is in engagement with

the said radial face of at least one of the seal elements throughout the orbital movement of said piston member.

4,219,316

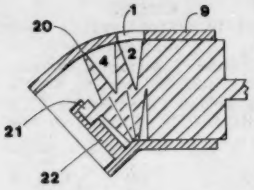
CURVED SPIRAL PUMP

Chung L. Feng, 16 Seven Springs Rd., Radnor, Pa. 19087

Filed Jun. 5, 1978, Ser. No. 913,008

Int. Cl.[3] **F01C** *5/02, 21/08;* **F04C** *5/00, 29/00*

U.S. Cl. 418—153 **4 Claims**



1. A fluid pump comprising

a curved housing with inlet and outlet ports,

a spiral impeller, inside of and with periphery substantially in contact with said housing, bent to the housing curvature to form substantially line contacts between spiral turns, forming chambers confined by spiral turns, their line contacts, and wall of housing and preventing direct communication between inlet and outlet ports, and

means to rotate said impeller to advance said chambers from being connected to the inlet port through isolation to being connected to the output port.

4,219,317

DEVICE FOR PRODUCING HOLLOW MOLDED MEMBERS

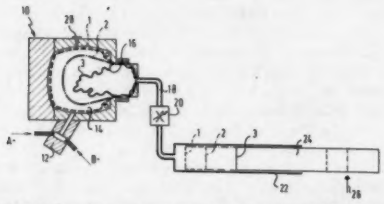
Günter Willmerding, Inning, Fed. Rep. of Germany, assignor to Metzeler Kautschuk Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 8, 1979, Ser. No. 46,861

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1978, 2826340

Int. Cl.[2] **B29C** *5/00;* **B29H** *5/18, 5/02, 17/00;* **B29F** *1/06*

U.S. Cl. 425—145 **4 Claims**



1. Apparatus for production of hollow shaped bodies made of pourable and hardenable material in a mold cavity and minimizing the inclusion of air in the shaped body which comprises, a mold having a mold cavity, a core with a deformable membrane disposed in the mold cavity, said membrane normally filling only part of the mold cavity but expandable to fill the entire mold cavity, a conduit means connected to a source of a liquid medium and leading to the deformable membrane for the introduction of the liquid medium under superatmospheric pressure which liquid expands the membrane to a volume that substantially fills the mold cavity to include the space into which the hardenable material will be poured to form the hollow shaped body and expels gas contained therein, the mold cavity having an opening formed therein, pressure means through said opening for the introduction of hardenable material corresponding to the amount of material required to produce the shaped body at a superatmospheric pressure above the pressure of the liquid in the membrane to effect contraction of the membrane to the form of the core, and a piston-cylinder unit connected to said conduit means for the transfer of said liquid medium into and out of said mold cavity.

4,219,318

APPARATUS FOR PREPARING FRESH FARINACEOUS PASTES

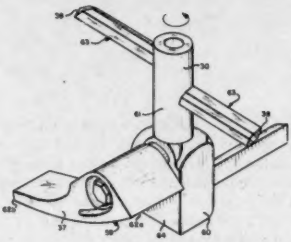
Alfredo Cavalli, 9 via Galileo Galilei, Pessano con Bornago, Milan, Italy

Continuation-in-part of Ser. No. 798,144, May 18, 1977, abandoned. This application Feb. 7, 1979, Ser. No. 10,089

Claims priority, application Italy, May 19, 1976, 23392 A/76

Int. Cl.[3] **B29B** *1/06;* **B01F** *7/18*

U.S. Cl. 425—190 **23 Claims**



17. An apparatus for preparing fresh food pastes from paste forming contents, comprising:

a vessel having a bottom and forming a mixing and kneading chamber for said food paste forming contents, said vessel having a closed side wall which is symmetrical about a vertical axis passing centrally through said chamber;

a rotatable member mounted within said chamber for rotation about said vertical axis;

drive means for rotating said member in a given direction;

blade means located in said mixing and kneading chamber and means operatively connecting said blade means to said rotatable member in a position extending away from said vertical axis, said blade means including a kneading blade extending into close confronting spaced relation with said side wall and having a lower surface with leading and trailing edges defined by said rotation in a given direction, said trailing edge having a normal position adjacent said bottom and being moveable away from said bottom and said leading edge being positioned at a substantially greater distance from said bottom than said normal position of said trailing edge; and

means for biasing said trailing edge towards said bottom for causing said kneading blade to exert downward pressure on paste forming contents passing between said lower surface and said bottom during the rotation of said rotatable member to effect the kneading of said contents.

19. Apparatus for preparing fresh food paste from paste forming ingredients, said apparatus being of the type including a mixing vessel having a wall defined by a surface of revolution and another wall transverse to said first defined wall and forming a mixing and kneading chamber; drive means having a rotatable output shaft disposed along the central axis of said surface of revolution; a food paste extruder in juxtaposition with said chamber for extruding pastes formed within said mixing vessel; a passage extending through one of said walls defining said mixing vessel to said extruder for providing a path for pastes formed in said mixing vessel from said mixing vessel to said extruder; and blade means mounted on said output shaft of said drive means within said mixing vessel with said shaft about the central axis of the surface of revolution, wherein the improvement comprises:

said blade means being effective for mixing said ingredients, for kneading said mixed ingredients to form a paste and for forcing said paste out of said mixing vessel through said passage into said extruder; said blade means comprising a blade having one edge in close confronting relationship with one said wall defining said mixing vessel, said blade having another edge disposed further from said one surface than said one edge, said blade being configured and disposed for pressing said paste forming ingredients against said one wall to knead said paste and for exerting a force on food paste formed in said mixing vessel in the direction of said passageway for forcing said food paste into said passageway and toward said extruder.

4,219,319

MACHINES SUITABLE FOR USE IN THE MANUFACTURE OF CERAMIC WARE

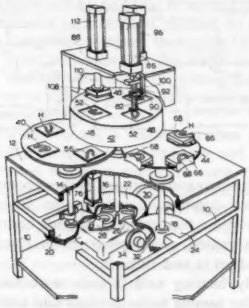
Robert Gater, and David L. J. Hancock, both of Stoke-on-Trent, United Kingdom, assignors to Service (Engineers) Limited, Stoke-on-Trent, England

Filed May 21, 1979, Ser. No. 40,909

Claims priority, application United Kingdom, May 20, 1978, 20970/78

Int. Cl.[2] B28B *11/22, 21/92*

U.S. Cl. 425—229 **10 Claims**



1. A machine suitable for use in removing seams from cup handles comprising means for carrying a plurality of sponges step-by-step successively through a series of operating stations, each of the sponges having a passage of suitably profiled cross-section for removing the seams from the handles, means at a first station for pushing a handle one way along the passage of a sponge, means at a second station for pushing the handle along the passage the other way and for ejecting it from the sponge, means at a following station comprising a hollow tube of similar profile to the cross-section of the passages of the sponges with perforations in its wall, and means for causing the tube to traverse to and fro in the passage, means also being provided in the machine at this station for expelling water through the perforations of the tube during at least part of its traverse in each successive passage, and, at a further station, means comprising a presser member for squeezing the sponges to remove excess water, the machine being thus so arranged that each sponge is cleaned in a cycle of operation of the machine after removing the seam from a handle.

4,219,320

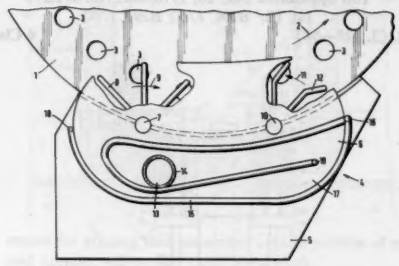
PREFORMING PRESS

Werner Stüben, Büchen; Rudolf Eltzschig, Geesthacht, and Konrad Friedrichs, Sinzig, all of Fed. Rep. of Germany, assignors to Wilhelm Fette GmbH, Schwarzenbek, Fed. Rep. of Germany

Filed Jul. 11, 1979, Ser. No. 43,222

Int. Cl.[2] B29C *3/00*; B30B *11/08*

U.S. Cl. 425—345 **5 Claims**



1. A preforming machine, comprising a rotary die disc with a plurality of dies; punching means cooperating with the dies; first means for cooling said die disc; filling means fixedly arranged at the periphery of said disc for feeding a molding material into said dies, said filling means including a housing with an intake funnel and, within said housing, a filling vane wheel and a dosing vane wheel; and additional cooling means arranged on said filling means for cooling said molding material.

4,219,321

DEVICE FOR MAKING DISCS

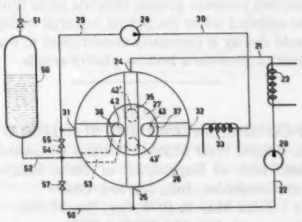
Peter L. Holster, and Adam Ooms, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 23, 1979, Ser. No. 14,394

Claims priority, application Netherlands, Dec. 21, 1978, 7812387

Int. Cl.[2] B29C *17/00*; B25D *17/00*; B30B *18/34*

U.S. Cl. 425—384 **8 Claims**



1. A device for making discs, comprising a press which includes at least one hydraulic pressure chamber, one wall of which is formed during operation by a flexible, thermally conductive plate which can be pressed against a thermoplastic substrate, the device furthermore comprising a first system of ducts which includes a pump whereby a hot liquid can be supplied to and discharged from the pressure chamber and a second system of ducts which includes a pump whereby a cold liquid can be supplied to and discharged from the pressure chamber, there being provided means for keeping the liquid in the systems of ducts and the pressure chamber pressurized, characterized in that the means for keeping the liquid pressurized are formed by an expansion vessel, the liquid part of which communicates with the pressure chamber as well as

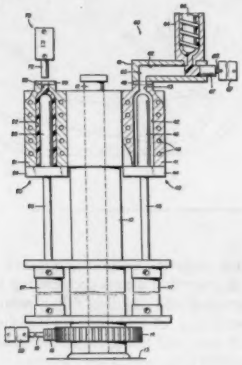
with the two systems of ducts, the gas part of said expansion vessel communicating with a pressure control device.

4,219,322

APPARATUS FOR MOLDING PLASTIC ARTICLES

Long F. Chang, and Robert F. Kontz, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 826,300, Aug. 22, 1977, Pat. No. 4,150,088.
This application Dec. 20, 1978, Ser. No. 971,279
Int. Cl.[2] B29C *1/00*; B29F *1/00*
U.S. Cl. 425—547 **4 Claims**



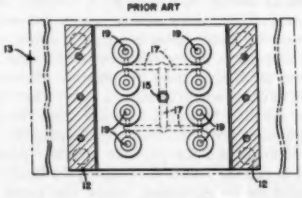
1. An apparatus for forming a plastic article, comprising:
a movable mold having an internal mold cavity and a sprue opening;
supply means at a first station for filling the internal mold cavity and sprue opening with heated, flowable plastic material;
low pressure filling means at the first station to fill the mold at a pressure of less than about 5000 psi;
displacement means for moving the mold immediately after filling from the first station to a second station where the sprue opening is in alignment with an axially reciprocal pressurizing member; and
fluid power means for (a) axially displacing the pressurizing member into the sprue opening to apply pressure to the plastic material within the internal mold cavity and (b) maintaining pressure greater than the mold filling pressure on the member while the plastic material within the internal mold cavity is thermally conditioned to a self-sustaining state to provide a hollow plastic article.

4,219,323

SELF-COMPENSATING HOT MANIFOLD LINK

Stephen A. Bright, West Milton; William R. Gaiser, and John W. Gaiser, both of Dayton, all of Ohio, assignors to The Broadway Companies, Inc., Dayton, Ohio

Filed May 9, 1979, Ser. No. 37,595
Int. Cl.[2] B29F *1/022*
U.S. Cl. 425—572 **8 Claims**



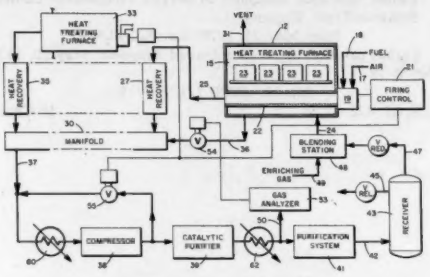
1. For use in an injection molding machine, a self-compensating link for coupling a plurality of manifolds for injection from a common injector, comprising:
(a) a link body,
(b) injector coupling means on said link body for coupling to an injector to receive fluid therefrom,
(c) manifold coupling means on said body for coupling to a plurality of manifolds to supply fluid thereto,
(d) channel means in said body for conveying fluid therethrough from said injector coupling means to said manifold coupling means, and
(e) expansion and contraction compensating means on said body for permitting and absorbing movement of said manifold coupling means on said body caused by thermal expansions and contractions of the manifolds while coupled thereto, to provide for coupling a plurality of such manifolds which, when in service, are mounted rigidly with respect to one another, heating them, and then injecting them simultaneously from a single injector.

4,219,324

PROCESS FOR TREATING METALS USING RECYCLED GASES

James A. Zahniser, Severna Park, Md., assignor to The C. M. Kemp Manufacturing Company, Glen Burnie, Md.

Filed Sep. 12, 1978, Ser. No. 941,680
Int. Cl.[3] F27B *3/22, 5/04*
U.S. Cl. 432—26 **10 Claims**



1. A metal heat-treating furnace process comprising:
(a) generating combustion products in an indirect heater located within a heat-treating furnace containing a metal to be heat-treated, said combustion products serving as a source of heat in said furnace,
(b) indirectly heating said furnace with said combustion products by passing same through said indirect heater,
(c) removing said combustion products from said indirect heater within said furnace,
(d) treating the removed combustion products at a location entirely external to said furnace to deplete oxygen from the removed combustion products without affecting the thermal efficiency of said furnace,
(e) passing the oxygen-depleted combustion products into said furnace to function as a treating atmosphere for the metal being heat-treated, and
(f) heat-treating said metal in said furnace in the presence of said oxygen-depleted combustion products.

4,219,325

AXIAL FLOW REVERSIBLE FAN FOR A HEAT TREATING FURNACE

Howard L. Gutzwiller, Zelienople, Pa., assignor to Robinson Industries, Inc., Zelienople, Pa.

Filed Jul. 10, 1978, Ser. No. 922,987
Int. Cl.[3] F27D *7/04*; F04D *29/54*
U.S. Cl. 432—199 **6 Claims**

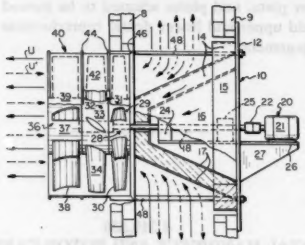
1. In a reversible flow plug unit for a heat treating furnace

having an inner chamber and an outer chamber enclosing and communicating with said inner chamber, said inner and outer chambers having openings aligned to receive said plug unit; said plug unit having a shaft extending through said openings; an impeller mounted on said shaft and having opposing faces and a plurality of substantially flat blades extending in a radial direction; and a driving means attached to said shaft; the improvement comprising:

a first set of fixed concavo-convex vanes disposed about and extending radially from said shaft and located adjacent a face of said impeller and between said impeller and said driving means;

a second set of fixed concavo-convex vanes disposed about and extending radially from said shaft adjacent an opposite face of said impeller;

said vanes of said first and second sets of vanes each having a cross sectional radius of curvature which varies along the length of said vane such that, for a predetermined impeller diameter and fluid flow rate, a fluid drawn across said first or second set of vanes and into said spinning



impeller is deflected by said first or second set of vanes so that the velocity of said fluid relative to said impeller blades is substantially tangent thereto at all radii, and as said fluid exits said impeller, the other set of vanes is curved so that the velocity of the exiting fluid relative to said other set of vanes is substantially tangent so said other set of vanes at all radii;

said vanes further having a leading portion adjacent said impeller and a trailing portion opposite said impeller, said trailing portion having a curvature such that it deflects said fluid exiting said impeller so that the velocity of said fluid is substantially parallel to said shaft;

a mounting flange located adjacent a wall of said outer chamber and between said driving means and said first set of vanes, said mounting flange having an opening through which extends said shaft; and

an insulated shaft housing attached to said mounting flange and positioned along said shaft between said wall of said outer chamber and a proximate wall of said inner chamber.

4,219,326

GLASS MELTING FURNACE STRUCTURE

Ronald O. Walton, Toledo, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Apr. 9, 1979, Ser. No. 28,201

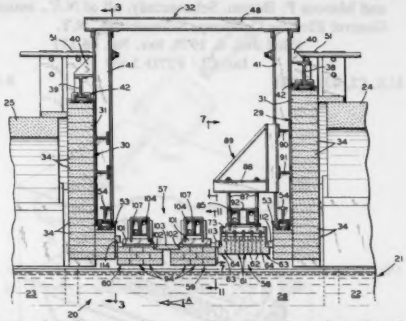
Int. Cl.[2] F27D *1/00*

U.S. Cl. 432—247 **7 Claims**

1. In a tank-type glass melting furnace structure of the type having a melting zone contiguous with a working zone, an inset breast wall section defining a reduced waist having entrance and exit ends for connecting the melting zone to the working zone, the improvement comprising:

a. a pair of upright walls, one at each end of the reduced waist section, each said upright wall having a suspended central portion flanked by bottom supported wing wall portions, said suspended central portions extending across the reduced waist section;

b. an open framework located above the reduced wasit section from which said central portions of said upright walls are suspended; and



c. means for affixing said suspended central portion of each said upright wall to said open framework.

4,219,327

FUSION FIXING APPARATUS EMPLOYING HEAT AND PRESSURE

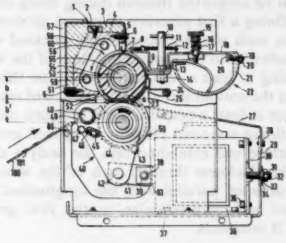
Hermann Idstein, Johannisberger Str. 55, 6227 Oestrich-Winkel, Fed. Rep. of Germany

Filed Nov. 27, 1978, Ser. No. 963,725

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1977, 2753299

Int. Cl.[2] F27B *9/28*; H05B *1/00*

U.S. Cl. 432—60 **15 Claims**



1. An apparatus for fusion fixing thermoplastic toner images on an image carrier by means of heat and pressure, comprising:

a heatable fixing roller comprising a first extension tube, a first cylindrical cover surrounding said first extension tube and being comprised of an elastic, heat- and permanent deformation-resistant material, and a first tubular sleeve pulled over said first cylindrical cover, said first tubular sleeve having a polytetrafluoroethylene surface;

a pressure roller mounted adjacent to said fixing roller, said pressure roller comprising a second extension tube, a second cylindrical cover surrounding said second extension tube and being comprised of an elastic, heat- and permanent deformation-resistant material, and a second tubular sleeve pulled over said second cylindrical cover;

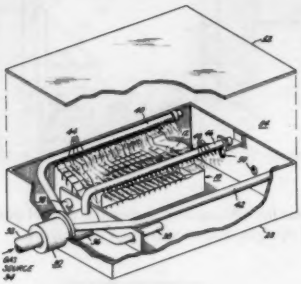
means for selectively engaging and disengaging said pressure roller against said fixing roller; and

means for driving said pressure roller and said fixing roller at the same speed when said rollers are engaged, whereby the image carrier material is transported between said rollers without blurring the images thereon.

4,219,328
APPARATUS FOR FIRING LOW DENSITY GRAPHITE/ALUMINA CORES

Wayne D. Pasco, Ballston Spa; Frederic J. Klug, Amsterdam, and Marcus P. Borom, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 6, 1979, Ser. No. 46,117
Int. Cl.[3] F27D 5/00
U.S. Cl. 432—253 9 Claims



1. A setter for supporting a ceramic core during firing comprising

a body of ceramic material having a coefficient of thermal expansion which is about the same as that of a core supported and fired thereon,

the body having two opposed end surfaces and two major opposed surfaces which are respectively, the top and bottom surfaces thereof,

a wall defining an aperture having a longitudinal axis and extending entirely through the body and terminating in the two opposed end surfaces,

the top surface is configured to match a surface of a ceramic core to be supported thereon during firing of the core,

walls defining a first plurality of spaced grooves in the top surface, each of the grooves being oriented substantially perpendicular to the longitudinal axis of the aperture and extending at least a sufficient depth from the top surface toward the bottom surface for a portion of each groove to intersect at least a portion of the aperture, and

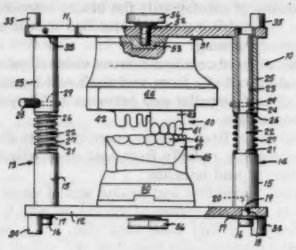
walls defining a second plurality of spaced grooves in the top surface and extending into the body a distance less than the thickness thereof, each of the second grooves being oriented parallel with the longitudinal axis of the aperture and perpendicular to the first grooves with which it intersects.

4,219,329
DENTAL CAST RELATOR

Frank V. Celanza, 30 Wenwood Dr., Brookville, N.Y.

Continuation-in-part of Ser. No. 886,420, Mar. 14, 1978, abandoned. This application Apr. 24, 1979, Ser. No. 33,004
Int. Cl.[3] A61C 11/00
U.S. Cl. 433—58 14 Claims

1. A dental cast relator for use in the production of dental restorations, comprising a pair of plates in substantially parallel position, a pair of posts connecting said plates and separating the same in such parallel position, said plates adapted to receive and retain on their inner faces dental reproductions of a patient's upper and lower jaws and to hold them in natural bite position, one of said posts mounted on each side of said dental mounting plates, said posts being laterally spaced equidistant from said plates, each said post having three sections of varying diameters, one such section being firmly attached to one parallel plate and having a shoulder at its upper end, an intermediate section of reduced diameter surrounded by a coil spring, and an upper section of still further reduced diameter providing with said intermediate section a shoulder which is precision machined, and a cylinder surrounding said upper section and having its lower end engaging the opposite end of said coil spring, said cylinders at their upper ends secured to

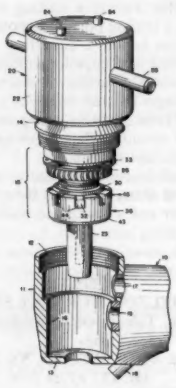


the other plate, said plates adapted to be moved manually to bring said upper and lower dental reproductions into natural bite engagement.

4,219,330
DENTAL HANDPIECE AND ROTOR CARTRIDGE REPLACEMENT ASSEMBLY THEREFOR

Boubene M. Jaremus, Barrington, Ill., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Sep. 20, 1978, Ser. No. 944,171
Int. Cl.[2] A61C 1/08
U.S. Cl. 433—126 20 Claims

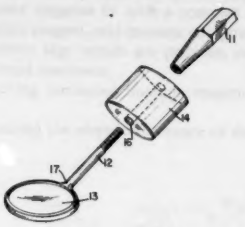


1. A multi-component rotor subassembly for dental handpieces, said subassembly having an axial opening therethrough for slidably receiving a spindle of a supporting tool and including as components of said subassembly a rotor, at least one rotor bearing assembly and resilient support ring therefor, and a plastic cup member; said cup member having a flexible and gradually tapered side wall and a centrally apertured end wall; said bearing assembly being received in said cup member, and said resilient support ring being frictionally secured between

said bearing assembly and said flexible side wall; said side wall being provided with a plurality of circumferentially-spaced notches defining therebetween a plurality of flexible fingers engaging said resilient bearing support ring.

4,219,331
DENTAL IMPLEMENT
Edwin H. Getz, 60 Olive Pl., Forest Hills, N.Y. 11375
Filed Dec. 26, 1978, Ser. No. 972,779
Int. Cl.[2] H61C 5/12
U.S. Cl. 433—140 **7 Claims**

1. A device for retracting the lip or cheek of a patient away from a work area during use of a dental instrument in the mouth of the patient comprising; a depressor member mounted on the instrument such that said member is free to rotate on the instrument independently thereof, said member having an enlarged external surface area transverse to the instrument, said area being adapted to engage the inside of the mouth of the patient while the instrument is being used thereby to widen the mouth to improve visibility therein.



4,219,332

PROCESS FOR DYEING WOOL OR WOOL/SYNTHETIC BLENDS

Heinz Abel, Reinach, and Charles Soiron, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 29, 1978, Ser. No. 946,998

Claims priority, application Switzerland, Sep. 29, 1977, 11907/77; Jun. 6, 1978, 6176/78

Int. Cl.[2] D06P *3/82*

U.S. Cl. 8—532 32 Claims

1. A process for dyeing wool or wool/synthetic blends with 1:1 metal complex dyes or acid metal-free wool dyes from an acid aqueous bath, which comprises dyeing said material in the presence of

(a) a quaternisation product of a polyalkylene oxide adduct of a fatty amine containing at least 16 carbon atoms and 15 to 100 moles of alkylene oxide, and

(b) a free or etherified N-methylolurea or N-methylolmelamine.

4,219,333

CARBONATED CLEANING SOLUTION

Robert D. Harris, 8145-B Belvedere Ave., Sacramento, Calif. 95826

Filed Jul. 3, 1978, Ser. No. 922,441

Int. Cl.[2] B08B *3/00;* C11D *3/00*

U.S. Cl. 8—137 18 Claims

1. An aqueous cleaning composition containing from about 0.1 to 5.0 percent by weight of one or more nonionic or anionic surfactants wherein the composition is carbonated and maintained at a pressure of from about 1 to 10 atmospheres.

4,219,334

POLYMER CARRIER AND METHOD FOR CARRYING OUT SCIENTIFIC, ANALYTICAL AND DIAGNOSTIC EXAMINATIONS

Gert Schluter, Liederbach, and Wilhelm Schuster, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Battelle-Institut e. V., Postfach, Fed. Rep. of Germany

Filed Mar. 3, 1978, Ser. No. 883,190

Claims priority, application Fed. Rep. of Germany, May 3, 1977, 2709625

Int. Cl.[2] G01N *33/16, 21/02, 31/14*

U.S. Cl. 23—230 B 23 Claims

1. A process for preparing a product for scientific, analytical or diagnostic examination which comprises the steps:

(a) admixing a material to be examined and/or a substance required for the examination with a solution comprised of a soluble carrier and a solvent for the carrier, and

(b) evaporating off the solvent, the material and/or substance being uniformly dispersed in the soluble carrier, and said product being formed,

said product comprising the material and/or substance and the soluble carrier, the soluble carrier consisting of a soluble polymer, the material to be examined and/or the substance required for the examination being uniformly dispersed and hermetically sealed without exposure to air in the soluble carrier being capable of fully dissolving in a solvent for the carrier, whereby there is a complete release of the material and/or substance.

4,219,335

IMMUNOCHEMICAL TESTING USING TAGGED REAGENTS

Richard C. Ebersole, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 848,217, Nov. 3, 1977, abandoned. This application Sep. 18, 1978, Ser. No. 942,261

Int. Cl.[2] G01N *33/16*

U.S. Cl. 23—230 B 10 Claims

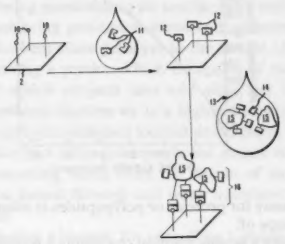
1. A method for determining the presence of an analyte in a body fluid consisting essentially of

a. contacting a surface with said fluid, said surface being coated with receptor reagents specifically reactive with said analyte;

b. contacting the coated surface with immune reagent comprising immune compound specifically reactive with the receptor reagents or with a complex of the analyte and receptor reagent, said immune compound being coated on reactance tags which are particles capable of affecting electrical reactance;

c. removing unreacted immune reagent from the surface; and

d. measuring the electric reactance of the surface.



10. An automated analytical system including a test surface having a receptor reagent bonded thereto, said receptor reagent being specifically reactive with a component of a body fluid, a station for the application of a body fluid sample to said test surface, means for the application of an immune reagent to the test area, said immune reagent comprising immune compounds specifically reactive with the receptor reagent or with a complex of the receptor reagent with the component of the body fluid, said immune compounds being coated on reactance tags comprising particles which are capable of affecting electrical reactance, means for the removal of excess immune reagent, and means for the detection of reactance tags on said test area.

4,219,336

DIAGNOSTIC AGENT AND METHOD FOR THE DETECTION OF OCCULT BLOOD IN FECES

Werner Guthlein, Mannheim-Neckarau; Hans Wielinger; Walter Rittersdorf, both of Mannheim-Waldhof, and Wolfgang Werner, Mannheim-Vogelstang, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Mar. 31, 1978, Ser. No. 892,359

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1977, 2716061

Int. Cl.[2] G01N *33/16*

U.S. Cl. 23—230 B 5 Claims

1. Diagnostic agent for the detection of occult blood in feces, comprising hydrogen peroxide and, as a chromogen, guaiaconic acid A, having a specific extinction $E_{1\,cm}^{1\%}$ at 600 nm of at least 200, determined by the reaction with peroxidase and hydrogen peroxide, having infra-red bands at

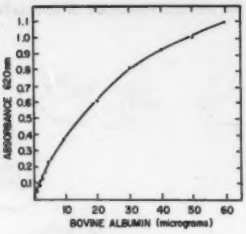
1600 cm^{-1} (m);
1505 cm^{-1} (v.s.);
1260 cm^{-1} (s;b);
1115 cm^{-1} (m);
1025 cm^{-1} (m); and
1200 cm^{-1} (s;b)

and having an R_F value of 0.45 (toluene/dioxan/glacial acetic acid; 90:25:10 v/v/v).

4,219,337
ASSAY FOR PROTEINS AND POLYPEPTIDES

Sidney E. Grossberg, and Joseph J. Sedmak, both of Milwaukee, Wis., assignors to The Medical College of Wisconsin, Milwaukee, Wis.

Filed Apr. 27, 1978, Ser. No. 900,693
Int. Cl.[2] G01N *33/16, 21/02*
U.S. Cl. 23—230 B 6 Claims



1. An assay for proteins or polypeptides in solution, comprising the steps of:

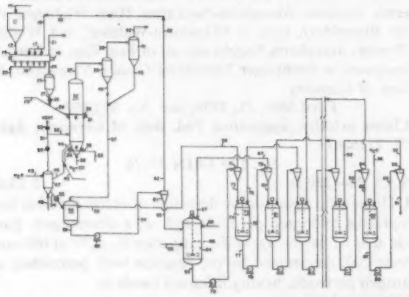
(1) mixing a sample solution containing a protein or polypeptide with an acidic reagent solution comprising Coomassie Brilliant Blue G25 dye and perchloric acid or hydrochloric acid to produce a change of color of the dye, the volume of sample solution and the volume of acidic reagent solution each being such as to provide a perchloric acid concentration in the resultant mixture of about 1.3% to 1.75% (w/v) or a hydrochloric acid concentration in the resultant mixture of about 0.6% to 1.2% (w/v), and

(2) observing the color of the resultant mixture to determine the concentration of protein or polypeptide in the sample solution.

4,219,338
HYDROTHERMAL ALKALI METAL RECOVERY PROCESS

Denise Y. Wolfs, Houston; Le Roy R. Clavenna, Baytown; James M. Eakman, Houston, all of Tex., and Theodore Kalina, Morris Plains, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 17, 1978, Ser. No. 906,516
Int. Cl.[2] C10J *3/06, 3/54*
U.S. Cl. 48—197 R 18 Claims



1. In a process for the conversion of a solid carbonaceous feed material in the presence of an alkali metal-containing catalyst into liquids and/or gases wherein char particles containing carbonaceous material, ash and alkali metal residues are produced, the improvement which comprises:

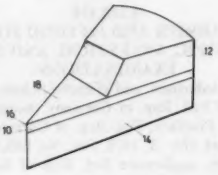
(a) treating said char particles containing said carbonaceous material, ash and alkali metal residues with a calcium or magnesium-containing compound in the presence of liquid water and an added base at a temperature between about 250° F. and about 450° F. whereby said calcium or magnesium-containing compound reacts with water-insoluble alkali metal constituents in said alkali metal residues to convert said water-insoluble constituents into water-soluble alkali metal constituents thereby producing an aqueous solution containing water-soluble alkali metal constituents and residue solids, wherein said base is added in a quantity sufficient to increase the amount of said water-insoluble alkali metal constituents converted into water-soluble alkali metal constituents and wherein at least a portion of said added base is obtained by water washing said residue solids to form an alkaline solution which is recycled to the treatment step; and

(b) using at least a portion of the water-soluble alkali metal constituents present in said aqueous solution in said conversion process as at least a portion of said alkali metal constituents comprising said alkali metal-containing catalyst.

4,219,339
DIAMOND AND CUBIC BORON NITRIDE ABRASIVE COMPACTS AND CONGLOMERATES

William I. Wilson, 18 East St., East Town, Johannesburg, Transvaal, South Africa

Filed Feb. 28, 1978, Ser. No. 882,809
Claims priority, application South Africa, Mar. 3, 1977, 77/1273
Int. Cl.[2] B24D *3/06*
U.S. Cl. 51—307 22 Claims



1. An abrasive body for abrading or machining a workpiece including an abrasive compact comprising a mass of diamond or cubic boron nitride abrasive particles, present in an amount of at least 70 percent by volume of the compact, bonded into a hard conglomerate; support means of high rigidity covering more than 50 percent of the surface of the compact and attached to the compact; the compact presenting a major surface on each of opposite sides thereof and to which the support means is attached, the support means extending over substantially the whole of the one major surface and over at least a part of the other major surface; and the compact presenting a formation salient in relation to the support means, capable of abrading or machining the workpiece.

4,219,340
METHOD AND APPARATUS FOR OUTFLOWING LIQUIDS FROM CHAMBER MAINTAINED UNDER VACUUM

Robert G. Kaiser, Seminole, Fla., assignor to Clark & Vicario Corporation, St. Petersburg, Fla.

Filed Dec. 14, 1978, Ser. No. 969,323
Int. Cl.[2] B01D *19/00*
U.S. Cl. 55—41 34 Claims

1. An apparatus for collecting a liquid at one location and conveying said liquid to a second point of use location, said one location being disposed a distance above said second location, said apparatus comprising

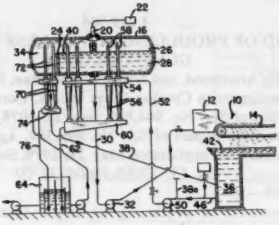
a receiver,

means for introducing an inflow of liquid to said receiver

and at a rate at which there is always a head space in said receiver above the liquid therein,

means for maintaining the head space in said receiver under a condition of vacuum sufficient to deaerate the liquid introduced in said receiver, and

barometric dropleg conduit means connecting said receiver to said point of use for conveying at least a portion of the liquid inflow to the receiver to said point of use, the condition of vacuum in said receiver and temperature of the liquid being such as to effect vacuum lift on said liquid in the dropleg conduit means and therewith maintain a level



of said liquid in said dropleg conduit means a certain distance above said point of use, the improvement wherein at least an upper portion length of said barometric dropleg conduit means comprises

a plurality of outflow pipes extending upwardly within said receiver a distance from the bottom thereof, flow entry to at least some of said pipes being at different heights above said receiver bottom than it is for others of said pipes, each outflow pipe extending downwardly from said receiver for a predetermined distance and having a lower terminal end which is positioned below the minimum vacuum lift level of liquid maintained in said dropleg conduit means.

4,219,341

PROCESS AND PLANT FOR THE RECOVERY OF WATER FROM HUMID AIR

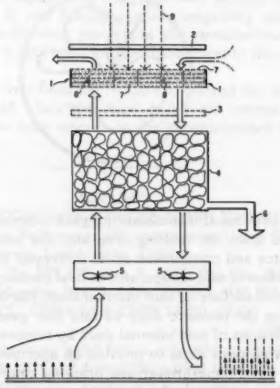
Peter Hussmann, Munich, Fed. Rep. of Germany, assignor to Mittex Aktiengesellschaft, Vaduz, Liechtenstein

Filed Nov. 24, 1978, Ser. No. 963,647

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1977, 2752748

Int. Cl.² B01D *53/04*

U.S. Cl. 55—179 **39 Claims**



1. A plant for carrying out a process for recovering water from humid air, comprising:

a layer of an air-permeable water adsorbent silica gel capable of adsorbing water from humid night air at a first temperature and desorbing the adsorbed water when exposed to daytime air at a second temperature higher than said first temperature, said layer being oriented for exposure of its principal surface to the sun's rays and being dark colored at least on its exposed surface for absorption of solar heat;

means, including a blower, for propelling a stream of ambient daytime air through said water adsorbent silica gel layer to define an upstream and a downstream direction in the ambient daytime air stream;

means, including at least one generally flat component having a colored surface oriented for exposure to the sun's rays and being permeable to air and the sun's rays, said flat component being positioned above and upstream of said water adsorbent silica gel layer in the stream of daytime air and having a portion which is capable of conducting heat and which projects into said silica gel layer, for heating ambient daytime air to a higher temperature;

a cold-storage type condenser located downstream from said water adsorbent silica gel layer in the stream of daytime air for removing water from the stream of daytime air after it has passed through said water adsorbent silica gel layer; and

means, including a blower, for propelling a stream of ambient humid night air at a temperature lower than said daytime air first through said condenser and thereafter through said layer of silica gel.

25. A plant for carrying out a process for recovering water from humid air, comprising:

a layer of an air-permeable water adsorbent medium capable of adsorbing water from humid night air at a first temperature and desorbing the adsorbed water when exposed to daytime air at a second temperature higher than said first temperature;

means for propelling a stream of ambient daytime air through said adsorbent medium layer to define an upstream and a downstream direction in the ambient daytime air stream;

means, including at least one air-permeable dark colored layer comprising a radiator member and a dark colored surface layer of adsorbent medium layer oriented for exposure to the sun's rays and positioned upstream of said adsorbent medium layer in the stream of daytime air, for heating ambient daytime air to a higher temperature, said radiator member comprising a flat structural component permeable to air and light, which is arranged above the adsorbent medium layer to be penetrated by the flow of daytime air entering the adsorbent medium layer, said flat structural component comprising a metal capable of conducting heat and including a portion passing downwardly from the top through the adsorbent medium layer in such a way that the air passes through the structural component within the layer while passing through the adsorbent medium layer, said portion being passed downwardly from the top in a serpentine line and the adsorbent medium being embedded between the individual sections of the serpentine portion, whereby the adsorbent medium together with the metal component forms a pre-fabricated, compact, box-type, flat absorption and adsorption package;

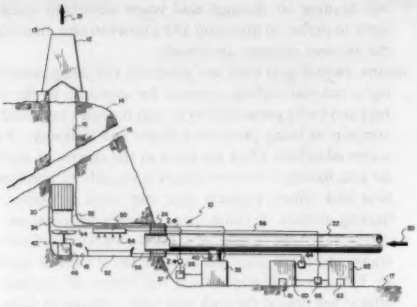
a condenser located downstream from said adsorbent medium layer in the stream of daytime air for removing water from the stream of daytime air after it has passed through said adsorbent medium layer; and

at least one reflector for reflecting the sun's rays onto at least one of said radiator member and said surface layer of said adsorbent medium layer.

4,219,342
POLLUTION CONTROL SYSTEM

Carl J. Workman, 240 E. 1100 North, North Salt Lake, Utah 84054

Filed Apr. 9, 1979, Ser. No. 28,474
Int. Cl.³ B01D 47/06
U.S. Cl. 55—222 15 Claims



1. A pollution control system for a pollution source located in proximity to mountainous terrain, said system comprising:

a smokestack erected on top of said mountainous terrain at a substantially higher elevation than said pollution source;

tunnel means connecting to the bottom end of said smokestack through at least a portion of said mountainous terrain; and

conduit means connecting said tunnel means to said pollution source so as to direct a gaseous pollution stream from the pollution source through the tunnel means to the smokestack; and

washer means located in a portion of said tunnel means for scrubbing pollutants from said gaseous pollution stream passing through said tunnel means.

4,219,343
FILTER BAG RETAINING SYSTEM WITH REMOVABLE THIMBLE EXTENSION

Harley G. Peterson, La Crescenta, Calif., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Apr. 4, 1979, Ser. No. 27,181
Int. Cl.² B01D 46/02
U.S. Cl. 55—378 4 Claims

1. In an apparatus for filtering particulate matter from a gaseous stream including a plenum having a wall provided with an aperture therein and said wall defining a raw gas chamber having a gas inlet opening and a filtered gas chamber having a gas outlet opening, a thimble secured to said wall and surrounding said aperture, an inwardly-inclined flange formed in the upper peripheral portion of said thimble, a vertically-extending tubular filter bag secured to said thimble and in flow-through communication with said plenum and extending into said filtered gas chamber, and a removable annular insert fitted into the interior of said thimble and having a portion which extends beneath the body of the thimble into said raw gas chamber such that gas flowing along said wall must flow downwardly and then upwardly through said annular insert before passing into said filter bag, said annular insert having an outwardly-flared flange portion at its upper periphery which rests on said first-mentioned flange.

4,219,344
METHOD OF PRODUCING MANGANESE CORDIERTIE GLASS-CERAMICS

William H. Armistead, and Irwin M. Lachman, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 944,856, Sep. 22, 1978, which is a continuation-in-part of Ser. No. 899,369, Apr. 24, 1978, abandoned. This application May 21, 1979, Ser. No. 40,967
Int. Cl.² C03B 19/06, 32/00
U.S. Cl. 65—18 10 Claims

1. A method of producing an impervious glass-ceramic product having a cordierite crystal structure which comprises:

formulating a raw batch which will form glass having a molar composition within the range 1.7–2.4RO.1.9–2.4Al$_2$O$_3$.4.5–5.2SiO$_2$ where RO consists essentially of 10–75 mole percent MgO and 25–90 mole percent MnO,

melting the raw batch to form a glass,

producing powder from the glass,

fashioning powder derived from the glass into the shape of the product, and

firing the shaped powder to a temperature of from 950° C. to 1450° C. for a sufficient time to sinter to the impervious glass-ceramic product.

4,219,345
SALVAGING AND RESTRAINING RECUPERATOR FROM COLLAPSE

Eugene M. Haynes, Hebron, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 841,498, Oct. 11, 1977, Pat. No. 4,143,708. This application Sep. 15, 1978, Ser. No. 942,562
Int. Cl.² B23P 7/00
U.S. Cl. 65—27 3 Claims

1. In a process of manufacturing glass wherein flue gases are conveyed from the melting area into the internal duct of a recuperator and combustion air is conveyed internally of the external duct of said recuperator in heat exchanging relation to the external surface of said internal duct, the improvement of decreasing the pressure drop of said flue gases through collapsed portions of said internal duct by removing a portion of said external duct so as to provide an aperture therethrough, inserting a rod therethrough and bringing a portion of said rod into hooked relation with a hookable part of said internal duct adjacent said collapsed portion, and drawing said rod outwardly so as to bring said collapsed portion outwardly, and during said outward drawing, sealing fluid communication

through said aperture between the combustion air and the ambient surroundings.

4,219,346

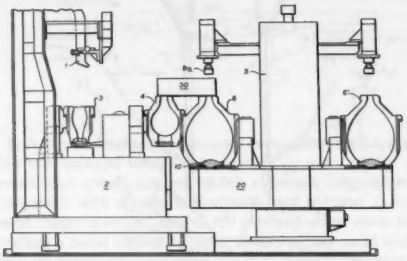
APPARATUS FOR THE PRODUCTION OF LARGE GLASS CONTAINERS

Antonio Cruccu, Milan, Italy, assignor to Industria Macchine Impianti, Milan, Italy

Division of Ser. No. 878,543, Feb. 16, 1978. This application Aug. 2, 1978, Ser. No. 930,471

Int. Cl.² C03B *9/00, 9/14*

U.S. Cl. 65—207 **10 Claims**



1. In an apparatus for the manufacture of large glass containers, comprising:

a first preparatory mold;

means for preparing a glass gob of a predetermined weight and feeding it to the first preparatory mold at a predetermined frequency to form a parison at the same frequency comprising a finished mouth of the glass container to be formed;

a second prefinishing mold;

means for linearly transferring the parison to the second, prefinishing mold;

means for forming, at the same frequency, a prefinished parison in the second mold;

two to four finishing molds;

means for transferring the prefinished parison to one finishing mold; and

means for finishing the prefinished parison in the finishing mold by blowing air into the prefinished parison;

the improvement comprising:

a. means for continuously rotating the finishing molds in a circular path at a rotational speed in a ratio of from 1:2 to 1:4 to the predetermined frequency; and

b. said means for transferring the prefinished parison from the second mold to one finishing mold comprising means for feeding the unfinished parison at the predetermined frequency along a path substantially diametrical to the circular path;

wherein two to four finishing molds are utilized for each first and second mold when the third molds are rotated at the appropriate ratio with respect to the predetermined transfer frequency.

4,219,347

MULTICOMPONENT SOIL SUPPLEMENT

Donald C. Young, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 805,130, Jun. 9, 1977, Pat. No. 4,133,668. This application Sep. 5, 1978, Ser. No. 939,390

Int. Cl.² C05D *9/02;* **C05B** *15/00, 19/00*

U.S. Cl. 71—11 **10 Claims**

1. The homogeneous solid fusion comprising a continuous rhombic sulfur matrix and a comixture of at least one particulate mineral nutrient and hydrocarbon dispersed throughout said continuous sulfur matrix, wherein said fusion contains at least about 50 weight percent rhombic sulfur and between about 1 and about 50 weight percent of said comixture based on the total weight of said fusion, said comixture comprises at least about 5 weight percent based on the total weight of said comixture of at least one particulate plant nutrient compound selected from the group consisting of compounds of phosphorus, zinc, iron, copper, magnesium, manganese, molybdenum, boron, and combinations thereof, and at least two weight percent based on the weight of said comixture of a hydrocarbon non-reactive with said sulfur at said melt temperature and having a melting point below the melt temperature hereinafter defined and a boiling point above said melt temperature, the amount of said hydrocarbon being at least sufficient to wet the surfaces of said particulate mineral nutrient, said fusion having been prepared by the method including the steps of (a) forming a melt comprising about 1 to about 50 weight percent based on the total weight of said melt of said nutrient-hydrocarbon comixture and at least about 50 weight percent sulfur at a melt temperature within the range of about 120° to about 400° C., and (b) cooling said melt to a temperature below its melting point to form said homogeneous, solid fusion.

4,219,348

STORAGE-STABLE NITROGEN-ZINC FOLIAR SPRAY COMPOSITIONS

Thomas M. Parham, Jr., and James E. Sansing, both of Baton Rouge, La., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 868,011, Jan. 9, 1978, abandoned. This application Nov. 16, 1978, Ser. No. 960,401

Int. Cl.² C05C *9/00*

U.S. Cl. 71—30 **12 Claims**

1. A composition comprising a storage-stable fertilizer solution of pH below about 5 consisting essentially of water, about 8% to 20%, by weight, of zinc nitrate solute, about 18% to 36%, by weight, of ammonium nitrate solute and urea solute in an amount from 0 up to about 6%, by weight, of the composition, said fertilizer solution having an ammonium nitrate to urea weight ratio of at least about 3 to 1 and a nitrogen to zinc weight ration of between about 1 to 1 and 8 to 1.

4,219,349

NUTRIENT COMPOSITIONS, METHODS AND PROCESSES

Charles E. Bardsley, St. Louis, Mo., assignor to Mallinckrodt, Inc., St. Louis, Mo.

Continuation of Ser. No. 848,555, Nov. 4, 1977, abandoned. This application Mar. 5, 1979, Ser. No. 17,315

Int. Cl.² C05D *9/00, 9/02*

U.S. Cl. 71—62 **8 Claims**

1. A granular, free-flowing plant nutrient composition suitable for use in growth media exhibiting plant nutrient composition characteristics including having essentially uniform chemical and physical properties, a bulk density of from about 0.8 to about 1.0 gram per cc and a particle size of from about 4 to about 50 mesh consisting essentially of calcined clay granules selected from the group consisting of montmorillonite, attapulgite, sepiolite, and chlorite having a permanent cation exchange capacity of from about 15 to 25 milliequivalents per 100 grams and having attached thereto in nutrient amounts the nutrients iron, zinc, molybdenum, manganese, copper, boron, chlorine and sulphur.

4,219,350
2-ETHYL-1,3-HEXANEDIOL AS A CHEMICAL PINCHING AGENT

Sol J. Barer, Clark, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Aug. 17, 1978, Ser. No. 934,303
The portion of the term of this patent subsequent to Sep. 13, 1994, has been disclaimed.
Int. Cl.[2] A01N 5/00, 9/24
U.S. Cl. 71—78 6 Claims

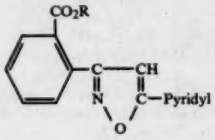
1. A method for the inhibition of suckering in growing plants susceptible thereto comprising the application of an effective amount of a composition comprising an active agent consisting essentially of 2-ethyl-1,3-hexanediol.

4,219,351
ARYL-3-ISOXAZOLE BENZOATES

Robert K. Howe, Bridgeton, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 796,295, May 12, 1977, Pat. No. 4,140,515. This application Sep. 19, 1978, Ser. No. 943,844
Int. Cl.[2] A01N 9/22; C07D 213/04
U.S. Cl. 71—94 8 Claims

1. A compound having the formula



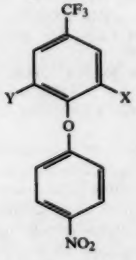
wherein R is selected from the group consisting of hydrogen, alkyl containing 1–5 carbon atoms and agriculturally acceptable cations.

4,219,352
HERBICIDAL 4-TRIFLUOROMETHYL-4-NITRODIPHENYL ETHERS

Horst O. Bayer, Levittown; Colin Swithenbank, Perkasie, and Roy Y. Yih, Doylestown, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 331,947, Feb. 12, 1973, Pat. No. 4,076,741. This application Jul. 11, 1977, Ser. No. 814,368
Int. Cl.[2] A01N 9/20
U.S. Cl. 71—105 7 Claims

1. The method of controlling weeds which comprises applying to the surface of the growth medium prior to the emergence of the weed from the growth medium the compound of the formula:

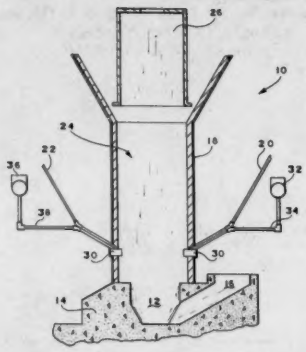


wherein X is a hydrogen atom, a halogen atom, a trifluoromethyl group, a (C_1–C_4) alkyl group, or a cyano group, and Y is a hydrogen atom, a halogen atom, or a trifluoromethyl group in an amount sufficient to kill or destroy or inhibit the growth of weeds.

4,219,353
METHOD OF OPERATING A LEAD BLAST FURNACE

Theodore W. Anthony, Baton Rouge, La., assignor to Schuylkill Metals Corporation, Baton Rouge, La.

Continuation of Ser. No. 829,909, Sep. 1, 1977, abandoned. This application Feb. 26, 1979, Ser. No. 15,063
Int. Cl.[2] C22B 13/02
U.S. Cl. 75—77 1 Claim



1. A process for smelting lead ores and lead bearing residues, which comprises;

(a) providing a lead blast furnace, which comprises;

a crucible;

a water-jacketed column defining a shaft over said crucible;

means of providing cooling water to said column;

a plurality of tuyeres, evenly spaced and mounted through the walls of said column, above the bottom of said crucible;

a plurality of pipe means each for carrying oxygen to each of the plurality of said tuyeres for release above said crucible and into the smelting zone of the blast furnace;

an adjustable valve means connected to each of said pipe means for carrying, said valve means adjustably regulating the rate of flow of oxygen to each of said tuyeres;

means associated with said pipe means for sensing the rate of flow of oxygen therein; and

controller means connected to the means for sensing and adapted to open the valve associated with one of said pipe means when the means for sensing senses an impedance in the one pipe means to bring the oxygen flow rate in the one pipe means up to the level of flow travelling through the remaining, unimpeded pipe means and also adapted to close the valve associated with one of said pipe means when the means for sensing senses less resistance to gas flow in the one pipe means to bring the oxygen flow rate in the one pipe means down to the level of flow travelling through the remaining, higher resistant flow pipe means in response to changes in the rate of oxygen flow sensed by said means for sensing; the flow in the remaining pipe means being maintained at a constant predetermined rate;

(b) charging the shaft with sinter, fluxes, coke and a lead bearing composition;

(c) circulating cooling water through the water-jacketed column;

(d) heating the charge;

(e) delivering oxygen to the tuyeres through the pipe means; and

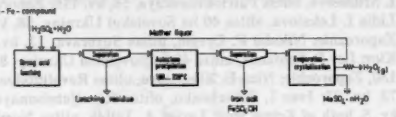
(f) maintaining by operation of the controller means, a predetermined level of flow of oxygen through the pipe means.

4,219,354

HYDROMETALLURGICAL PROCESS FOR THE TREATMENT OF OXIDES AND FERRITES WHICH CONTAIN IRON AND OTHER METALS

Jussi K. Rastas; Sigmund P. Fugleberg; Seppo O. Heimala; Sitg-Erik Hultholm, all of Pori, and Jaakko T. I. Poljarvi, Vanha-Ulvila, all of Finland, assignors to Outokumpu Oy, Helsinki, Finland

Filed Oct. 27, 1978, Ser. No. 955,500
Claims priority, application Finland, Nov. 28, 1977, 773588
Int. Cl.[2] C22B *19/22, 23/04, 15/08, 47/00*
U.S. Cl. 75—101 R 8 Claims



1. A hydrometallurgical process comprising leaching a ferritic raw material which contains one or more of the other metals zinc, cobalt, copper, nickel, cadmium, magnesium and manganese with an aqueous sulfuric acid solution at an elevated temperature to dissolve the iron and other metal and to produce a metal sulfate solution, removing any solid material from the metal sulfate solution and then treating the solution at elevated temperature and pressure to precipitate ferric iron and separating said ferric iron from the metal sulfate solution, subjecting the metal sulfate solution to evaporation in order to crystallize the metal sulfates from a mother liquor; separating the metal sulfates from the mother liquor; recycling the mother liquor to the stage of leaching at elevated temperature with sulfuric acid solution; and recovering the separated metal sulfates.

4,219,355

IRON-METALLOID AMORPHOUS ALLOYS FOR ELECTROMAGNETIC DEVICES

Nicholas J. DeCristofaro, Chatham; Alfred Freilich, Livingston, and Davidson M. Nathasingh, Parsippany, all of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed May 25, 1979, Ser. No. 42,472
Int. Cl.[2] C22C *1/00, 19/00, 31/00, 39/00*
U.S. Cl. 75—123 B 5 Claims

1. A metal alloy which is at least 90% amorphous consisting essentially of a composition having the formula $Fe_aB_bSi_cC_d$ wherein "a", "b", "c" and "d" are atomic percentages ranging from about 80.0 to 82.0, 12.5 to 14.5, 2.5 to 5.0 and 1.5 to 2.5, respectively, with the proviso that the sum of "a", "b", "c" and "d" equals 100.

4,219,356

MACHINABLE FERRITIC STAINLESS STEELS

Tatsuo Fujiwara, Nagoya; Shozo Abeyama; Kiyohito Ishida, both of Agui, and Sadayuki Nakamura, Chita, all of Japan, assignors to Daido Tokushuko Kabushiki Kaisha, Nagoya City, Japan

Filed Sep. 13, 1978, Ser. No. 942,138
Claims priority, application Japan, Sep. 20, 1977, 52-112158
Int. Cl.[2] C22C *38/22, 38/60, 39/16*
U.S. Cl. 75—126 L 1 Claim

1. Machinable ferrite stainless steels consisting of not more than 0.030% of C, not more than 0.050% of N, not more than 0.012% of O, not more than 0.8% of Si, not more than 1.6% of Mn, 0.05–0.40% of S, 16–22% of Cr, 1–3% of Mo, the remainder being Fe, provided that the sum of C and N is not more than 0.060% and Mn/S is 2–5, characterized in that Cr content based on 100 parts by weight of sulfide inclusions formed in the said steels is 10–50 parts by weight.

4,219,357

METHOD FOR PRODUCING POWDER METALLURGY ARTICLES

Charles F. Yolton, Coraopolis, and Francis H. Froes, Pittsburgh, both of Pa., assignors to Crucible Inc., Pittsburgh, Pa.

Filed Mar. 30, 1978, Ser. No. 891,664
Int. Cl.[2] B22F *3/16*
U.S. Cl. 75—221 9 Claims

1. A method for producing compacted articles from powder of a hydride-forming alloy comprising introducing hydrided powder of a hydride-forming alloy to a collapsible container, sealing said container and heating the powder to an elevated temperature suitable for compacting, hot compacting said powder to produce a substantially fully dense article, dehydriding said article, reheating said dehydrided article and compacting said dehydrided article to remove voids formed during said dehydriding.

4,219,358

ANTI-CORROSION COATING COMPOSITION

Toshiharu Hayashi, Yokohama, and Kenji Kurosawa, Yokosuka, both of Japan, assignors to Dai Nippon Toryo Co., Ltd., Osaka, Japan

Filed Sep. 8, 1978, Ser. No. 940,608
Claims priority, application Japan, Sep. 13, 1977, 52-109506; Jun. 6, 1978, 53-68112
Int. Cl.[2] C09D *5/10*
U.S. Cl. 106—1.17 5 Claims

1. An anti-corrosion coating composition comprising as main components zinc powder and at least one binder selected from the group consisting of alkyl orthosilicates and alkali metal silicates wherein the alkyl groups of said alkyl orthosilicates contain from one to four carbon atoms and the weight ratio of said binder to said zinc powder is in the range of from 1:12 to 1:18, and further containing at least one member selected from the group consisting of ultrafine particulate aluminum oxide and ultrafine particulate titanium oxide in an amount of 0.05 to 2.0 parts by weight per 100 parts by weight of the zinc powder, wherein said ultrafine particulate oxide has an average particle size of 5 to 50 mμ and a specific surface area of 30 to 120 m^2/g.

4,219,359

SINTERED BODY OF ZIRCONIA FOR OXYGEN CONCENTRATION SENSOR

Naoto Miwa, Tsushima; Masami Ouki, Nagoya; Katsuhiko Tanaka, Toyokawa, and Masatosi Suzuki, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 21, 1979, Ser. No. 22,929
Claims priority, application Japan, Apr. 18, 1978, 53-45710
Int. Cl.[2] C04B *35/48;* G01N *27/58*
U.S. Cl. 106—39.5 6 Claims

1. A sintered body of zirconium oxide material for an oxygen concentration sensor exhibiting an electromotive force in accordance with the difference in the concentration of oxygen between a gas to be tested and a reference gas, consisting essentially of partially stabilized zirconium oxide and at least one additive selected from the group of yttrium oxide, calcium oxide and ytterbium oxide which zirconium oxide has cubic and monoclinic phases both existing in mingling relation, said additive being solid-soluted in zirconium oxide, wherein the ratio of the X-ray diffraction intensity of the surface $(11\bar{1})$ of the monoclinic phase to the X-ray diffraction intensity of the surface (111) of the cubic phase, or the X-ray diffraction intensity ratio $I(11\bar{1})/I(111)$, is in the range between 0.05 and 0.40, and the changes in value of the X-ray diffraction intensity ratio $I(11\bar{1})/I(111)$ caused by heating and holding the partially stabilized sintered material of zirconium oxide at the range between 200° and 300° C. minus the initial X-ray diffraction intensity ratio $I(11\bar{1})/I(111)$ obtained before heating and holding the partially stabilized sintered material of zirconium oxide at the

range between 200° and 300° C. are in the range between −0.05 and +0.10.

4,219,360

PRODUCTION OF BONE CHINA

Raymond Thompson, Esher, England, assignor to United States Borax & Chemical Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 958,286, Nov. 6, 1978, abandoned. This application Aug. 9, 1979, Ser. No. 65,259
Claims priority, application United Kingdom, Nov. 28, 1977, 49473/77; Feb. 28, 1979, 07105/79
Int. Cl.[2] C04B *33/24*
U.S. Cl. 106—45 21 Claims

1. In the method of making bone china by firing a composition comprising bone ash and clay, the improvement which consists of adding to the composition prior to firing a boron-containing substance which is in water-insoluble form.

14. A bone ash for the manufacture of bone china comprising calcined bone on which has been incorporated by calcination a source of B_2O_3.

4,219,361

METHOD OF IMPROVING THE SUSCEPTIBILITY OF A MATERIAL TO MICROWAVE ENERGY HEATING

Willard H. Sutton, and Walter E. Johnson, both of Clinton, N.Y., assignors to Special Metals Corporation, New Hartford, N.Y.

Continuation-in-part of Ser. No. 795,345, May 9, 1977, abandoned. This application Jun. 9, 1978, Ser. No. 914,120
Int. Cl.[2] C04B *35/02, 35/64*
U.S. Cl. 106—63 7 Claims

1. The method of making an article susceptible to microwave energy reaction which comprises

mixing together a major proportion of Al_2O_3 in granular form with a minor proportion of CaO in granular form to form a dry mixture

adding a minor proportion of water to said dry mixture to form a wet mixture in which the ingredients react,

and forming said wet mixture into said article.

4,219,362

SAG RESISTANT PORTLAND CEMENT COMPOSITIONS

George T. Colegrove, San Diego, Calif., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Feb. 28, 1979, Ser. No. 16,259
Int. Cl.[2] C04B *7/352*
U.S. Cl. 106—92 8 Claims

1. A cement composition comprising 30–99.5% Portland cement, 0–70% filler, and 0.5 to 3.0% cold-water soluble tamarind gum.

4,219,363

PROCESS FOR THE PREPARATION OF PORTLAND CEMENT CLINKER

Vladimir A. Tokar, ulitsa Revoljutsionnaya, 65, kv. 6; Maria I. Zubik, ulitsa Postysheva, 9, kv. 35, both of Krivoi Rog; Grigory M. Baklanov, ulitsa Kirova 34a, kv. 54, Kiev; Nikolai F. Matygin, Krivoi Rog.; Valentin S. Ustinov, ulitsa Gorkogo, 9, kv. 20; Anatoly V. Kolesnikov, ulitsa Raevskogo, 3, kv. 114, both of Moscow; Stanislav I. Gashenko, ulitsa Gorkogo, 159, kv. 76, Zaporozhie; Alexandr A. Rogatkin, ulitsa 40 let Sovetskoi Ukrainy, 76, kv. 3, Zaporozhie; Leonid P. Khlopkov, ulitsa 40 let Sovetskoi Ukrainy, 24, kv. 11, Zaporozhie; Vera I. Mikheeva, ulitsa Patrioticheskaya, 58, kv. 115, Zaporozhie; Lidia I. Lekalova, ulitsa 40 let Sovetskoi Ukrainy, 58, kv. 39, Zaporozhie; Nikolai F. Drepin, ulitsa Suvorava, 13, kv. 141, Kiev; Lev P. Feofanov, ulitsa 40 let Sovetskoi Ukrainy, 82, kv. 130, Zaporozhie; Nina E. Khodotova, ulitsa Revoljutsionnaya, 73, kv. 23; Ivan I. Shevchenko, ulitsa Revoljutsionnaya, 67, kv. 5, both of Krivoi Rog; Larisa A. Telina, ulitsa Nemirovicha-Danchenko, 14, Zaporozhie; Vladimir I. Garmash, ulitsa Juzhno-Ukrainskaya, 19, kv. 50, Zaporozhie, and Andrei M. Frantsevich, ulitsa 40 let Sovetskoi Ukrainy, 76a, kv. 12, Zaporozhie, all of U.S.S.R.

Filed Sep. 29, 1978, Ser. No. 946,974
Int. Cl.[2] C04B *7/24*
U.S. Cl. 106—100 2 Claims

1. A process for the preparation of portland cement clinker, comprising grinding limestone, clay and iron-containing components; homogeneizing the resultant mix; pelletizing the resultant homogeneized mix; decarbonizing the resultant pellets at 800° to 1000° C.; roasting said pellets at 1200° C. to 1350° C.; adding at the grinding or homogeneization stage dust sublimates—wastes of the titanium and magnesium production—in an amount from 0.5 to 6.0% by total weight of raw mix, and, in case the dust sublimates are added at the stage of homogeneization, adding, at the pelletizing stage, an aqueous suspension of cakes—wastes of the titanium and magnesium production—at a volumetric ratio of water to cakes of 3–6:1, in an amount of 10 to 14% by total weight of raw mix.

4,219,364

SULFUR FOAM PROCESS AND PRODUCT

Gar L. Woo, Tiburon, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 672,202, Mar. 31, 1976. This application Dec. 13, 1978, Ser. No. 969,119
Int. Cl.[2] C08K *3/06;* C09K *3/00*
U.S. Cl. 106—122 12 Claims

1. A process for producing a sulfur foam containing at least 50 weight percent sulfur which comprises first contacting and reacting molten sulfur with phenol or aliphatic polysulfide to thereby obtain a phenol-sulfur adduct or an aliphatic polysulfide-sulfur adduct and then contacting and reacting the adduct with maleic anhydride at a temperature between about 100 and 190° C. to thereby obtain a sulfur foam.

4,219,365

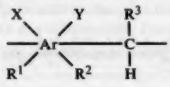
PIGMENT DISPERSIONS AND THEIR USE FOR THE PIGMENTING OF HYDROPHILIC AND HYDROPHOBIC MEDIA

Erwin Dietz, Kelkheim; Max Grossmann, Frankfurt am Main; Robert Gutbrod, Frankfurt am Main, and Michael Maikowski, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Dec. 27, 1978, Ser. No. 973,722
Claims priority, application Fed. Rep. of Germany, Dec. 31, 1977, 2759203
Int. Cl.[2] C09C *1/00*
U.S. Cl. 106—308 Q 14 Claims

1. A pigment dispersion comprising

(a) a tinctorially effective amount of an organic and/or inorganic pigment,
(b) water and/or a water-miscible compound as a dispersion medium for said pigment,
(c) a condensation product of an aromatic hydroxy compound and an alkanol,
(d) a surfactant containing an aliphatic carbon chain of more than 5 carbon atoms, said condensation product and surfactant being present in amounts effective to disperse said pigment in said dispersion medium, said condensation product having an average molecular weight of 400 to 5000 and consisting of recurring units of the formula



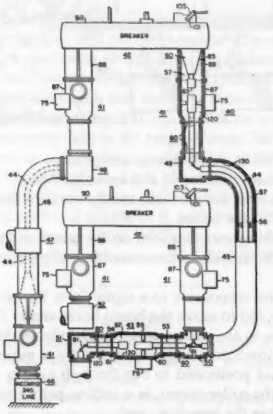
wherein Ar is benzene or naphthalene; X is hydroxy, etherified or esterified hydroxy; Y is hydrogen, —R^4, —OR^4, halogen, —CO—R^4, —$COOR^4$, —$CONR^4R^5$ or —NR^4COR^5, R^4 and R^5 standing, independently of each other, for hydrogen and alkyl of 1 to 4 carbon atoms; R^1, R^2 and R^3 are, independently of each other, hydrogen, alkyl, alkenyl or alkapolyenyl each having up to 30 carbon atoms, the carbon chains of which are uninterrupted or interrupted by —O—, —S—, —NR^4—, —CO—, —COO—, —$CONR^4$— or phenylene, and which are unsubstituted or substituted by halogen, hydroxy or carboxy; with the proviso that per each two such recurring units at least one of R^1, R^2 and R^3 contains an aliphatic chain of more than 5 carbon atoms.

4,219,366

ADHERENT COATING FOR ENTRAPPING CONTAMINATION PARTICLES IN GAS-INSULATED ELECTRICAL APPARATUS

George D. Dixon, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 27, 1978, Ser. No. 928,639
Int. Cl.[2] B08B *7/00, 9/00, 15/00*
U.S. Cl. 134—4 **7 Claims**



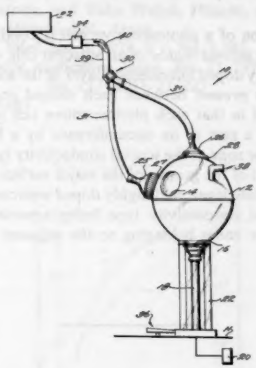
6. A method of entrapping contaminating particles in an enclosed electrical system including spaced-apart conducting members at different electric potentials and an insulating gas disposed intermediate said conducting members and providing electrical insulation therebetween, comprising the steps of:
providing a relatively hard insulating coating comprised of a binder component and an active component on selected surface areas within said enclosed electrical system, said insulating coating having an exposed surface thereof, said binder component being a vinyl selected from the group consisting of vinyl chloride, vinyl chloride-vinyl acetate copolymers, ethylene-vinyl acetate copolymers, and mixtures thereof and said active component being a phenolic resin, the ratio of said binder component:active component being about 1:0.3 to 5.0; and
inserting a solvent vapor comprising trichloroethylene into said enclosed electrical system, said binder component being chemically inert to said solvent vapor, said active component interacting with said solvent vapor to render only the surface of said insulating coating tacky to thereby entrap contaminating particles thereon.

4,219,367

SURGICAL PREP HAND CLEANING

George R. Cary, Jr., and Stocker R. Cary, both of 3439 Prytania St., Room 205, New Orleans, La. 70115

Filed Oct. 5, 1978, Ser. No. 949,388
Int. Cl.[2] B08B *3/02*
U.S. Cl. 134—29 **13 Claims**



10. A method of hand cleansing utilizing a chamber with a pair of horizontally spaced hand openings therein, with a pair of pulsating water jet spray heads disposed in a common vertical plane and directed into the interior of the chamber so that jets issuing therefrom have a downward velocity component and intersect at an angle of about 60° to about 135°, one of the spray heads being located in substantially a common horizontal plane with the hand openings and between the hand openings, and a drain opening being provided in the bottom of the chamber, said method comprising the steps of:
delivering pure water to the spray heads,
issuing jets of pure water from the spray heads at about 50 to 100 psi at a pulsing rate of about 800–1200 pulses per minute while a person's hands are positioned within the chamber, until the desired degree of cleanliness of the hands has been achieved, and
withdrawing the water sprayed into the chamber through the drain opening, and sewering it.

4,219,368

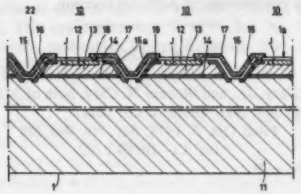
SEMICONDUCTOR DEVICE HAVING A NUMBER OF SERIES-ARRANGED PHOTOSENSITIVE CELLS

Gérard R. David, Cambes en Plaine, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 10, 1979, Ser. No. 37,784
Claims priority, application France, May 19, 1978, 78 14890
Int. Cl.[2] H01L *31/06*
U.S. Cl. 136—89 MS **5 Claims**

1. A semiconductor device for converting electromagnetic

radiation into electrical energy, having a monocrystalline semiconductor body comprising a number of series-arranged photosensitive cells, in which each cell has a first region of a first conductivity type which, within the semiconductor body, is surrounded by a second region of a second conductivity type, and in which the first and second regions adjoin a major surface of the semiconductor body on which the radiation is incident and form planar photosensitive p–n junctions, in which the photosensitive cells are situated on a common semiconductor substrate of the first conductivity type and are separated from each other by grooves extending from the major surface into the substrate, in which on the major surface



the first region of a photosensitive cell is conductively connected to the second region of an adjacent cell, characterized in that a highly doped intermediate layer of the second conductivity type is present between each second region and the substrate, and in that each photosensitive cell is surrounded over at least a part of its circumference by a highly doped semiconductor zone of the second conductivity type extending along the wall of the groove of the major surface down to the said intermediate layer, said highly doped semiconductor zone of the second conductivity type being separated from the semiconductor zones belonging to the adjacent cells by the substrate.

4,219,369

METHOD OF MAKING SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Katsumi Ogiue, Hinode; Takahisa Nitta, Fuchu; Kazumichi Mitsusada, Kodaira; Masato Iwabuchi, Tokyo, and Masanori Odaka, Fuchu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 4, 1978, Ser. No. 931,007

Claims priority, application Japan, Sep. 30, 1977, 52-116847; Sep. 30, 1977, 52-116848; Sep. 30, 1977, 52-116849; Oct. 14, 1977, 52-122358; Oct. 14, 1977, 52-122359

Int. Cl.[2] H01L *21/26*

U.S. Cl. 148—1.5 **12 Claims**

1. A method of making a semiconductor integrated circuit device including the steps of:

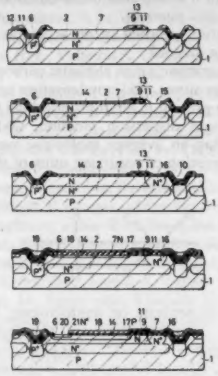
(a) providing a plurality of isolated regions of one conductivity type in a semiconductor substrate, each isolated region having a substantially flat surface;

(b) forming a first masking layer over the surface of at least one of said isolated regions, said first masking layer having first and second holes spaced apart from each other a predetermined distance in accordance with two semiconductor regions to be formed in said isolated region;

(c) covering the surface of said isolated region within said second hole with a second masking layer;

(d) introducing a first impurity into the isolated region through said first hole to form a first semiconductor region having a relatively high impurity concentration; and

(e) introducing a second impurity into the isolated region through said second masking layer within said second hole to form a second semiconductor region having a



relatively low impurity concentration spaced apart from said first semiconductor region.

4,219,370

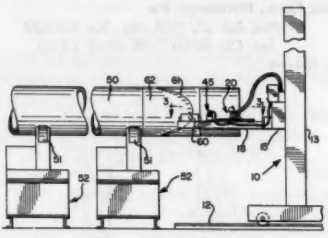
APPARATUS AND METHOD FOR CUTTING AND BEVELING PIPE ENDS

Harold B. Hoaglin, Sylacauga; James R. Grill, Birmingham, and Jack H. Keller, Cullman, all of Ala., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Feb. 21, 1979, Ser. No. 13,518

Int. Cl.[2] B23K *26/00*

U.S. Cl. 148—9.6 **11 Claims**



1. Apparatus in combination comprising:

a horizontally positioned and movable boom,

roller means to support and axially rotate a horizontal pipe parallel to the boom,

a photocell scanner mounted on the boom and positioned to follow a template circumscribing a pipe on the roller means,

drive means, responsive to a signal from the photocell scanner, adapted to move the boom horizontally in either axial direction as the photocell scanner follows the template,

a cutting torch movably supported by a mounting on the boom and positioned to cut through a pipe, rotating axially on the roller means, in a cutting path having the same contour as the template, and

the torch mounting has means to rotate the torch from a position lateral to the axis of a pipe on the roller means through an angle of at least 65° on each side of the lateral position while keeping the torch mouth at a substantially fixed position relative to a pipe on the roller means.

8. A method of cutting the end of a pipe for intersection with another surface, comprising:

placing a pipe on roller means to support and axially rotate it horizontally and parallel to a horizontally positioned and movable boom having a cutting torch movably supported by a mounting on the boom and a photocell scanner spaced from the torch;

placing a template which is readable by the photocell scanner on and at least partially circumscribing the pipe;

activating the roller means to rotate the pipe;

automatically moving the boom horizontally and axially responsive to the photocell scanner tracing the template and simultaneously cutting the pipe with the torch in a path which is controlled by the template, and

rotating the torch within an angle of about 25° to 155° with respect to the pipe axis as the pipe rotates, while keeping the torch mouth at a substantially fixed position relative to the pipe, to bevel the end of the pipe.

4,219,371

PROCESS FOR PRODUCING HIGH-TENSION BAINITIC STEEL HAVING HIGH-TOUGHNESS AND EXCELLENT WELDABILITY

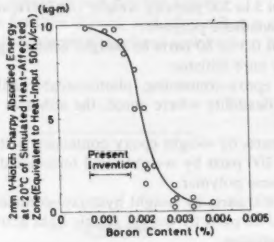
Hajime Nakasugi, Kimitsu; Masana Imagumbai, Kisarazu, and Hiroshi Tamehiro, Kimitsu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Apr. 5, 1979, Ser. No. 27,393

Claims priority, application Japan, Apr. 5, 1978, 53/40092

Int. Cl.[2] C21D 7/14

U.S. Cl. 148—12 F **4 Claims**



1. A process for producing a high-tension bainitic steel sheet having high-toughness and excellent weldability, which comprises heating a steel ingot or slab to a temperature not higher than 1150° C. and subsequently rolling the heated steel ingot or slab under conditions such that the total reduction amount at temperatures not exceeding 900° C. is 60% or more and the finishing temperature falls in the range of from 700° to 800° C., said steel ingot or slab consisting of 0.005 to 0.03% of C, not more than 0.4% of Si, 1.4 to 2.0% Mn, not more than 0.008% of S, 0.005 to 0.08% of total Al, 0.01 to 0.08% of Nb, 0.005 to 0.25% of Ti, 0.0008 to 0.0018% of B, 0.001 to 0.005% of N and the balance, to make up 100%, of Fe and unavoidable impurities, and satisfying the expression of $0 \leqq Ti\% - 3.4(N\%) \leqq 0.01$.

4,219,372

HOMOGENIZATION OF ZIRCONIUM ALLOYS

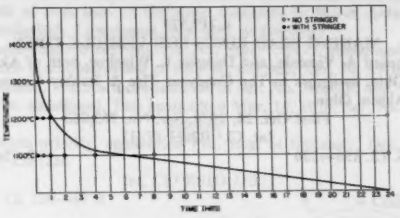
Michael S. Fang, Albany, Oreg., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 873,691, Jan. 30, 1978, abandoned. This application Dec. 19, 1978, Ser. No. 970,972

Int. Cl.[2] C22F 1/18

U.S. Cl. 148—133 **4 Claims**

3. A process of minimizing or relatively reducing tin rich stringer type alloy segregates of an initial thickness of about 0.1 to 1 micron in zirconium alloys containing an effective amount of tin to form tin rich segregates comprising heating said zirconium alloy at a temperature of from 1100° C. to 1400° C. for a time of from eight hours to ten minutes, respectively.



4. A wrought zirconium alloy containing tin heat treated so as to be free from tin rich stringer type alloy segregates.

4,219,373

METHOD OF FABRICATING A SEMICONDUCTOR DEVICE

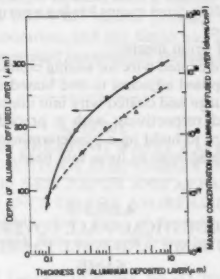
Yasuhiro Mochizuki; Hiroaki Hachino, both of Hitachi; Yutaka Misawa, Katsuta, and Yoko Wakui, Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 5, 1979, Ser. No. 1,163

Claims priority, application Japan, Jan. 11, 1978, 53-1125

Int. Cl.[2] H01L 21/225

U.S. Cl. 148—187 **11 Claims**


DEPTH OF ALUMINIUM DIFFUSED LAYER (μm)
MAXIMUM CONCENTRATION OF ALUMINIUM DIFFUSED LAYER (atoms/cm³)
THICKNESS OF ALUMINIUM DEPOSITED LAYER(μm)

1. A method of fabricating a semiconductor device of the type wherein aluminium is selectively diffused into a silicon semiconductor substrate comprising the steps of:

(a) selectively forming recesses in at least one major surface of said silicon semiconductor substrate;

(b) depositing aluminium into said recesses;

(c) diffusing the aluminium into said silicon semiconductor substrate by subjecting it to a heat treatment, the diffusion being effected in an atmosphere containing an oxidizing gas, whereby diffusion source residua formed by oxidation of the aluminium is confined in said recesses and prevented from creating projections extending above said at least one major surface of the substrate.

4,219,374

MONOPROPELLANT COMPOSITION

Manfred J. Cziesla, and Kurt F. Mueller, both of Oxon Hill, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 23, 1967, Ser. No. 678,484

Int. Cl.[3] C06B 29/22

U.S. Cl. 149—75 **9 Claims**

1. A liquid monopropellant composition comprising the solution of an hydroxylammonium perchlorate oxidizer, a compatible fuel selected from the group consisting of a water

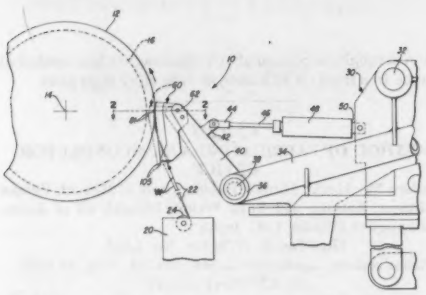
soluble fuel and a water dispersible fuel, and water, wherein said oxidizer, fuel and water are present in the weight ratio of 1:9:10 to 16:1:2.

4,219,375

MAKING BEAD RINGS FOR VEHICLE TIRES

Leonard A. Vandale, and Douglas L. Winslow, both of Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 26, 1978, Ser. No. 955,063
Int. Cl.[2] B29H *17/32*
U.S. Cl. 156—136 **9 Claims**



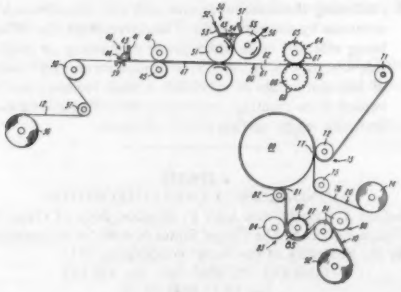
1. Method of making a tire bead of elastomer-coated wire;
moving said coated wire along a path from supply means to bead-winding drum means having a peripheral bead-forming groove;
rotating said drum means;
engaging said coated wire for sliding contact with placement means disposed adjacent to and biased toward said drum means to urge said coated wire into contact with the drum means and respectively with a preceding turn of said coated wire to build up a predetermined number of turns of said coated wire to form said bead.

4,219,376

FLEXIBLE ACOUSTICAL WALL COVERING, METHOD OF MAKING SAME, AND WALL PANEL EMPLOYING SAME

Charles A. Roman, Lake Hopatcong, N.J., assignor to L. E. Carpenter & Company, Inc., Wharton, N.J.

Division of Ser. No. 893,236, Apr. 4, 1978. This application Mar. 5, 1979, Ser. No. 17,785
Int. Cl.[2] B32B *31/18, 31/20*
U.S. Cl. 156—209 **8 Claims**



1. A method of making flexible fluid impervious acoustical wall covering in a continuous uninterrupted manner comprising the steps of, coating a substrate with a layer of plastisol to define a laminated construction having opposed planar surfaces, punching a plurality of spaced openings through said laminated construction substantially perpendicular to said opposed planar surfaces, supporting a supply roll of a web of fluid impervious film adjacent said laminated construction, bonding said fluid impervious film from said supply roll against an entire exposed surface of said laminated construction, and embossing said plastisol layer with said film against said entire exposed surface area yet still maintaining the fluid impervious character of said film throughout its entire surface area, said embossing step defining a roughened configuration in said layer having projections and indentations which serve as miniature sound baffles, said film sealing said openings and enabling said wall covering to be used as a fluid impervious covering yet with said film allowing substantially unobstructed passage of sound waves therethrough.

4,219,377

PHOTOCURABLE EPOXY COMPOSITION HAVING IMPROVED FLEXIBILITY COMPRISING VINYL TERMINATED ACRYLONITRILE-BUTADIENE POLYMER

Donald E. Albrecht, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 14, 1979, Ser. No. 20,312
Int. Cl.[2] B05D *3/06*; C08F *2/48, 8/00, 19/40*
U.S. Cl. 156—330 **14 Claims**

1. A photocureable epoxy-containing composition which exhibits improved flexibility when cured, said composition comprising in admixture:
(a) 100 parts by weight epoxy-containing material;
(b) about 5 to 200 parts by weight vinyl terminated acrylonitrile-butadiene polymer;
(c) about 0.5 to 80 parts by weight actinic light activatable epoxy cure initiator.

10. An epoxy-containing, photocureable adhesive having improved flexibility where cured, the adhesive comprising in admixture:
(a) 100 parts by weight epoxy containing material;
(b) 5 to 200 parts by weight vinyl terminated acrylonitrile-butadiene polymer;
(c) 5 to 400 parts by weight hydroxyl-containing material
(d) 0.5 to 80 parts by weight actinic light activatable epoxy cure initiator;
(e) 0.5 to 100 parts by weight adhesion promoter;
(f) 0.5 to 400 parts by weight filler.

11. A method of bonding substrates comprising the steps of:
(a) providing an admixture comprising an epoxy-containing material having therein vinyl terminated acrylonitrile-butadiene polymer
(b) coating one or both said substrates with said admixture
(c) bonding said substrates at said coating by curing said admixture.

4,219,378

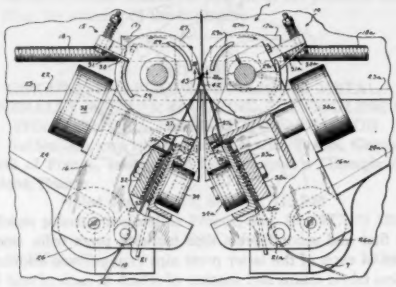
WEB SPLICING

Carl R. Marschke, Phillips, Wis., assignor to Marquip, Inc., Phillips, Wis.

Division of Ser. No. 793,552, May 4, 1977, Pat. No. 4,170,506, which is a continuation of Ser. No. 669,309, Mar. 22, 1976, abandoned. This application Apr. 16, 1979, Ser. No. 30,475
Int. Cl.[2] B65H *19/16, 19/18, 19/20*
U.S. Cl. 156—502 **4 Claims**

1. For use in connection with a machine for utilizing a traveling continuous web of paper or the like, and wherein a plurality of paper supply rolls are provided so that when the web of one paper roll is nearly exhausted, the web of a fresh paper roll can be substituted therefor, apparatus comprising:
(a) a splicing device disposed downstream from said supply rolls,
(b) a dancer roll disposed between said splicing device and the input to the said machine,

(c) a fixed idler roll disposed between said splicing device and said dancer roll,
(d) means for causing a first-named web to feed from one of the said paper rolls past said splicing device and over said fixed idler roll and hence past said dancer roll and to the said input of the machine,
(e) means for applying a braking force to said first-named web downstream of said one of said paper rolls and upstream of said splicing device,



(f) means at said splicing device for splicing a second-named web to the said first-named web,
(g) means for severing the second-named web from the first-named web,
(h) means for releasing said braking force,
(i) and means for then driving said idler roll as a capstan to tension and accelerate the spliced web back to line speed.

4,219,379

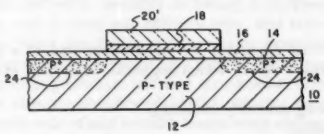
METHOD FOR MAKING A SEMICONDUCTOR DEVICE

Terry G. Athanas, Lewisville, Tex., assignor to Mostek Corporation, Carrollton, Tex.

Division of Ser. No. 759,803, Jan. 17, 1977, abandoned. This application Sep. 25, 1978, Ser. No. 945,362

Int. Cl.² H01L *21/306*

U.S. Cl. 156—653 **3 Claims**



1. A method for accurately forming an oxidation mask comprising the steps:
(a) forming a layer of an oxidation resistant material,
(b) depositing a polysilicon layer on the oxidation resistant layer,
(c) exposing the entire polysilicon to an oxidizing ambient to form a polyoxide layer,
(d) exposing selected portions of the polyoxide to an acid etch to form a polyoxide mask, and
(e) using the polyoxide mask to remove portions of the oxidation resistant layer to thereby form an oxidation mask for a layer beneath the oxidation resistant material.

4,219,380

DEVICE AND PROCESS FOR COOLING LIQUIDS CONTAINING SOLIDS

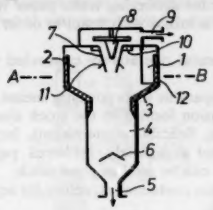
Edgar Muschelknautz, Leverkusen, and Rudolf Juse, Dormagen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 775,212, Mar. 7, 1977, abandoned, which is a continuation of Ser. No. 681,923, Apr. 30, 1976, abandoned, which is a continuation of Ser. No. 506,626, Sep. 16, 1974, abandoned. This application Mar. 14, 1978, Ser. No. 886,495

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1973, 2361236

Int. Cl.² B01D *1/00*

U.S. Cl. 159—47 R **4 Claims**



1. A process for the flash evaporation of a liquid containing solids, characterized in that the evaporation and subsequent separation of said liquid containing solids and resultant vapours is carried out in separate areas in such a manner that a reduction in pressure to below the vapour pressure of said liquid causes sudden evaporation, and the liquid and gaseous phase thus obtained are separated immediately thereafter by centrifugal force.

4,219,381

METHOD OF TREATING WASTE PAPER FOR OBTAINING A STOCK SUSPENSION FOR THE PRODUCTION OF NEW PAPER AND APPARATUS FOR THE PERFORMANCE OF THE AFORESAID METHOD

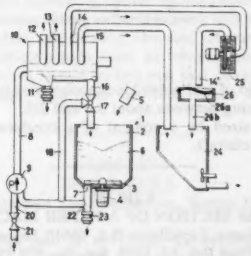
Hans Schnell, Mengen, Fed. Rep. of Germany, assignor to Escher Wyss GmbH, Ravensburg, Württemburg, Fed. Rep. of Germany

Filed Feb. 12, 1979, Ser. No. 11,780

Claims priority, application Switzerland, Mar. 7, 1978, 2442/78

Int. Cl.² D21C *5/02*

U.S. Cl. 162—4 **12 Claims**



1. A method of treating waste paper for obtaining a stock suspension for fabricating new paper, comprising the steps of:
forming a stock suspension in a stock slusher by infeeding waste paper and water into said stock slusher;
said stock suspension containing contaminants and not completely defibered paper parts;

withdrawing and removing in succession, outside of the stock slusher, the contaminants from the flow of the stock suspension in the form of heavy particles, floatable substances and plastic foils;

removing paper fibers from the stock suspension;

removing from the remainder of the suspension incompletely defibered paper parts;

further defibering the removed incompletely defibered paper parts; and

feeding the paper fibers removed from the stock suspension together with the fibers obtained from the incompletely defibered paper parts as good stock for further processing into paper.

5. An apparatus for treating waste paper in order to obtain a stock suspension for the fabrication of new paper, comprising:

a stock slusher for defibering waste paper within which the waste paper is mixed with water in order to form a stock suspension;

a sorting apparatus operatively connected with said stock slusher;

said sorting apparatus incorporating means for sorting the stock suspension formed in the stock slusher into heavy contaminants, floatable contaminants, large-surface contaminants, not completely defibered paper pieces and fibers which can be used as good stock;

the sorting means containing structure for separating out the contaminants;

an additional defibering means for receiving the not completely defibered paper pieces; and

means for receiving the fibers which are ready to be directly used and which have been separated out as good stock so that such received fibers can be directly employed for the paper fabrication.

4,219,382

CATIONIC FORTIFIED ROSIN SIZE

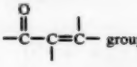
Carl T. Leffler, Gretna, La., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 19, 1976, Ser. No. 659,318

Int. Cl.[2] D21H *3/34*

U.S. Cl. 162—180 **15 Claims**

1. A cationic modified rosin polyamidopolyamine condensation product formed at a temperature of about 130° C.–200° C. from a water-soluble polyalkylenepolyamine having the generic formula $H_2N(C_mH_{2m}NY)_pC_mH_{2m}NH_2$ where Y represents H or $—C_mH_{2m}NH$, m is a whole integer between 2 and 4 inclusive, and p is an integer between 1 and 4, and an acid-fortified rosin being the Diels-Alder condensation product from a naturally occurring rosin and a α,β-ethylenically unsaturated compound of acidic character containing a



group,

the molar ratio of said polyalklyenepolyamine to said acid-fortified rosin being between about 3:2 and 2:3.

14. Paper sized by a content of a condensation product according to claim 1.

4,219,383

PRESS SECTION OF A PAPER MACHINE

Paavo J. Valkama, Leppäluoto B 1, 68610 Leppaluoto, Finland

Filed Feb. 17, 1978, Ser. No. 878,756

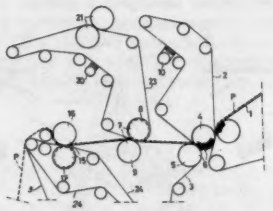
Claims priority, application Finland, Feb. 18, 1977, 770542

The portion of the term of this patent subsequent to Mar. 11, 1997, has been disclaimed.

Int. Cl.[2] D21F *3/04*

U.S. Cl. 162—360 R **8 Claims**

1. In a paper machine, a press section for removing water from a web, said press section having at least three nips and a common endless fabric means common to said three nips for conveying a web consecutively through said three nips, and additional endless fabric means situated at the first two of said three consecutive press nips for engaging the web at said first two press nips at a side of said web opposite from the side thereof engaged by said common fabric means, said additional endless fabric means being spaced from that part of the web which travels from the first to the second and from the second to the third of said three consecutive nips and wherein each of



said first and second press nips includes press rolls, one of which at each of the latter press nips engages said additional endless fabric means and another of which at each of said first and second press nips engages said common fabric means, and further wherein the press roll at said second press nip which engages said common fabric means is a smooth-surfaced roll while the press roll at said second press nip which engages said additional fabric means has a recessed surface for receiving water from the web.

4,219,384

DRIVING APPARATUS FOR AN ABSORBER ROD

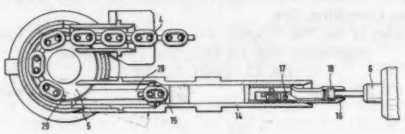
Heinz Cramer, Stade; Hubert Handel, Rimbach; Manfred Schefold, Maisach; Hermann Schmitt, Bad Durkheim, and Josef Schoening, Hambruecken, all of Fed. Rep. of Germany, assignors to Hochtemperatur-Reaktorbau GmbH, Cologne, Fed. Rep. of Germany

Filed Nov. 4, 1977, Ser. No. 848,603

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1976, 2650923

Int. Cl.[2] G21C *7/14*

U.S. Cl. 176—36 C **13 Claims**



1. A driving apparatus for an absorber rod of a nuclear reactor pressure vessel, which apparatus comprises, in combination:

(a) a driving assembly including:

1. a motor;

2. gear means operatively connected to the motor;

3. guide means actuated by the gear means, and

4. a flexible member carried by the guide means for raising and lowering the absorber rod upon actuation of the guide means;

(b) means for storing the flexible member;

(c) enclosure means disposed on the pressure vessel for detachably enclosing the driving assembly and the storing means within a desired gaseous atmosphere;

(d) screening plug means for isolating the interior of the pressure vessel from the interior of the enclosure means and provided with a passageway therethrough;

(e) a connecting element carried by the absorber rod and disposed within the passageway of the screening plug

means for movement between an upper end position and a lower end position, and wherein the cross-sectional configuration of the passageway substantially corresponds to the cross-sectional configuration of the connecting element for permitting the connecting element to function as a movable plug within the passageway;

(f) means for coupling one end of the flexible member to the connecting element; and

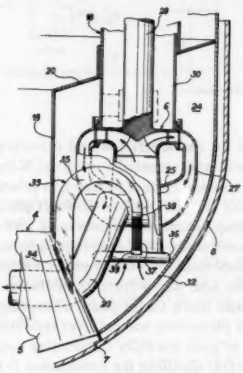
(g) means for releasably securing the connecting element in position in the passageway through the screening plug means to further isolate the interior of the pressure vessel from the interior of the enclosure.

4,219,385

CIRCULATING PUMPS OF A LIQUID METAL, GENERALLY SODIUM, ENSURING THE COOLING OF THE CORE OF A FAST NEUTRON REACTOR

Joël Guidez, Aix en Provence, and Maurice Pradel, Grenoble, both of France, assignors to Commissariat a l'Energie Atomique, France

Filed Jun. 5, 1978, Ser. No. 912,840
Claims priority, application France, Jun. 17, 1977, 77 18608
Int. Cl.[2] G21C *15/00*
U.S. Cl. 176—40 **2 Claims**



1. A fast nuclear reactor including a core, a supporting structure for supporting said core, and a vessel containing a liquid coolant metal, a pump for circulating said liquid metal, said pump being located within said vessel, the improvement comprising, a non-removable assembly portion of said pump, said non-removable assembly including a suction channel, a diffuser, and at least one delivery pipe, said non-removable assembly being attached to said supporting structure by means of at least two curved beams each fixed at one of its ends to the said supporting structure and each connected at its other end to the first ends of a plurality of parallel, separate metallic sheets, the second ends of said metallic sheets being connected to said non-removable assembly, whereby a radial displacement of the non-removable assembly portion of the pump is made possible.

4,219,386

PWR INTEGRAL TIE PLATE AND LOCKING MECHANISM

Jon L. Osborne, Richland, and Barney S. Flora, Benton City, both of Wash., assignors to Exxon Nuclear Company, Inc., Bellevue, Wash.

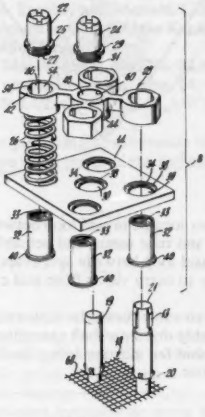
Filed Jun. 10, 1977, Ser. No. 805,524
Int. Cl.[2] G21C *3/30*; F16B *39/00*
U.S. Cl. 176—78 **10 Claims**

1. In the nuclear power reactor fuel bundle having a plurality of the fuel rods and tie rods, an upper tie plate locking mechanism, comprising:

(a) a tubular locking sleeve fixed to an end of a plurality of said tie rods, said locking sleeves including sleeve lugs projecting radially outward and spaced in increments about the periphery of said locking sleeve at an end away from said fuel bundle;

(b) an upper tie plate having a plurality of openings, one of said openings receiving each of said locking sleeves, such that said sleeve lugs on said locking sleeves extend beyond the tie plate on the side away from said fuel rods;

(c) locking nuts corresponding to each of said locking sleeves, said locking nuts including a hollow tubular cap capable of receiving said locking sleeves with lugs projecting radially inward from the interior walls of said cap, said cap lugs spaced about the periphery of said cap and corresponding to said sleeve lugs for mating engagement,



said locking nuts movable between a locked and unlocked position;

(d) a retaining sleeve including a hollow tubular member capable of receiving said locking sleeve and extending through said openings on both sides of said tie plate, said tubular member having an enlarged end toward said fuel bundle so that said enlarged end may not pass through said openings of said tie plate, said retaining sleeve fixed at the end away from said fuel bundle to said nut, thereby operably connecting said locking nut to said tie plate; and

(e) means for restraining said locking nuts in said locked position, said restraining means operably connected to one of said retaining sleeve and said locking nuts such that said upper tie plate, said locking, nuts said retaining sleeve and said restraining means form an integral unit when said locking nuts is in said locked and said unlocked position and are removable from said fuel bundle as as integral assembly.

4,219,387

SOLAR STILL

Leonard R. Gruntman, 1644 Tubbs Ave., Benton Harbor, Mich. 49022

Filed Dec. 19, 1977, Ser. No. 861,976
Int. Cl.[2] C02B *1/04*; F24J *3/02*
U.S. Cl. 202—182 **14 Claims**

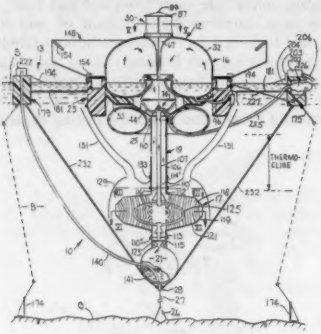
1. A floating solar still apparatus, comprising:

a solar energized evaporating chamber including an annular sunlight absorbing basin for water to be distilled covered by a sunlight admitting top wall, and adapted to float on a body of water to be distilled;

a condenser and tube means pendently supporting said con-

denser from said evaporating chamber and defining a gas transfer loop therebetween, said loop having an output leg for supplying vapor from said evaporating chamber to said condenser and a return leg for returning air from said condenser to said evaporating chamber,

a hollow, upwardly flared, generally trumpet shaped diverter extending coaxially downward from the top of said evaporating chamber for smoothly diverting vapor downward from said chamber through the central opening of said annular basin to said tube means;



a fan member located in said loop between said evaporating chamber and tube means and actuable for circulating air through said loop between said evaporating chamber and condenser to carry vapor from said chamber to said condenser;

a wind-driven rotor rotatably supported atop said diverter and rotatably driving a shaft extending down through said diverter, said fan member being fixed to said shaft below said diverter.

4,219,388

PROCESS FOR THE RECOVERY OF MALEIC ANHYDRIDE FROM DISTILLATION RESIDUES

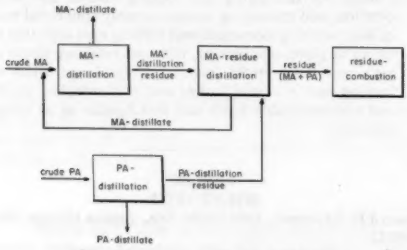
Karl-Heinz Heller, and Günther Lenz, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 26, 1978, Ser. No. 955,282

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1977, 2750284

Int. Cl.[2] B01D *3/10*; C07D *307/89*

U.S. Cl. 203—61 **12 Claims**



1. A process for the recovery of maleic anhydride from a distillation residue containing the same which comprises subjecting said distillation residue to distillation to distill-out maleic anhydride, adding a residue containing phthalic anhydride to the distillation residue containing maleic anhydride before or after maleic anhydride is distilled thereoff in an amount such that the weight ratio of residue containing phthalic anhydride to residue containing maleic anhydride which has been or is to be subjected to distillation is 0.3 to 1.5:1 and discharging the resultant residue from the bottom of the distillation unit.

4,219,389

SEPARATION OF ACRYLIC ACID FROM SOLUTIONS THEREOF IN TRI-N-BUTYL PHOSPHATE

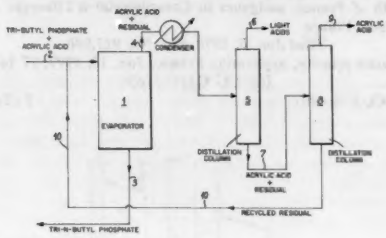
Georges Biola, Bron; Yves Komorn, Lyons, and Gerard Schneider, Caluire, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Jun. 12, 1978, Ser. No. 914,923

Claims priority, application France, Jun. 14, 1977, 77 18136

Int. Cl.[2] C07C *51/44*; B01D *1/22*

U.S. Cl. 203—72 **10 Claims**



1. A process for the separation and recovery of essentially pure acrylic acid and essentially pure tri-N-butyl phosphate from a solvent solution thereof, which comprises (i) vaporizing a feed stream of acrylic acid/tri-N-butyl phosphate solvent solution at a temperature not in excess of 160° C., such as to avoid degradation of the tri-N-butyl phosphate, and, whereby there is thus established (ii) a vapor phase comprising virtually all of the acrylic acid and a fraction of the tri-N-butyl phosphate solvent and (iii) a liquid phase consisting essentially of said tri-N-butyl phosphate solvent; (iv) recovering said liquid phase (iii); (v) at least partially condensing said vapor phase (ii); and thence (vi) distilling the condensate (v) at a temperature not in excess of 160° C. and under such reduced pressure as to avoid acrylic acid crystallization, to obtain a distillate (vii) comprising essentially pure acrylic acid and an acrylic acid/tri-N-butyl phosphate distilland (viii), while maintaining the amount of acrylic acid in said distilland (viii) to between 1 and 20%.

4,219,390

METHOD FOR THE REGENERATION OF A TINNING ELECTROLYTE

Eric J. Stuart, Heemskerk, and Bob de Mon, Alkmaar, both of Netherlands, assignors to Hoogovens Ijmuiden, B.V., Ijmuiden, Netherlands

Filed Sep. 20, 1978, Ser. No. 943,941

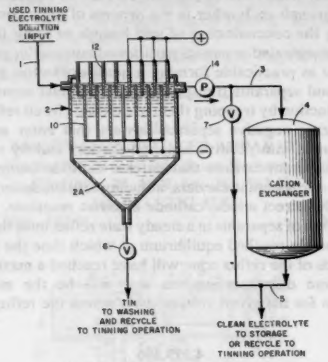
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1977, 2742718

Int. Cl.[2] C25D *21/22*

U.S. Cl. 204—54 R **2 Claims**

1. Method for regenerating an electrolytic liquid for tinning purposes in which the electrolytic liquid if freed from ions of foreign metals introduced into it during the tinning action, characterized by the steps of

(a) detinning of the electrolytic liquid through electrolysis and


USED TINNING ELECTROLYTE SOLUTION INPUT
CATION EXCHANGER
TIN TO WASHING AND RECYCLE TO TINNING OPERATION
CLEAN ELECTROLYTE TO STORAGE OR RECYCLE TO TINNING OPERATION

(b) releasing of the foreign metal ions by means of a cation exchanger.

4,219,391

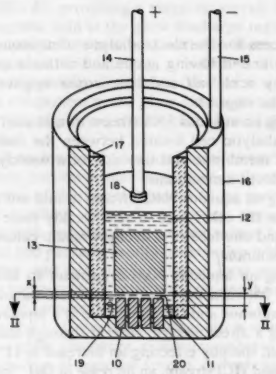
ELECTROLYTIC PRODUCTION OF METAL

Perry A. Foster, Jr., New Kensington, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 645,533, Dec. 31, 1975, abandoned. This application Aug. 25, 1976, Ser. No. 717,700

Int. Cl.[2] C25C *3/00, 3/06*

U.S. Cl. 204—67 **10 Claims**



1. A method for the electrolytic production of metal, including electrolyzing, between anodic and cathodic surface areas, a compound of the metal dissolved in a molten solvent, the electrolyzing being performed at a temperature such that the metal is formed in the molten state, wherein the improvement comprises the provision of cathodic surface area in the form of a grate inserted in the solvent, with the anode-cathode distance being up to 1¼ inches.

4,219,392

PHOTOSYNTHETIC PROCESS

Martin M. Halmann, Rehovot, Israel, assignor to Yeda Research & Development Co. Ltd., Rehovot, Israel

Filed Mar. 21, 1979, Ser. No. 22,511

Claims priority, application Israel, Mar. 31, 1978, 54408

Int. Cl.[2] C25B *3/04*

U.S. Cl. 204—72 **21 Claims**

1. A process for converting carbon dioxide or bicarbonate ion by reduction to organic compounds selected from alcohols, aldehydes and carboxylic acids of 1 to 2 C atoms, which comprises carrying out the reduction in a photoelectrochemical cell wherein the cathode is a p-type semiconductor, at least part of the energy of reduction being supplied by light.

4,219,393

PROCESS FOR PRODUCING SULFENIMIDES

Sigeru Torii; Hideo Tanaka, and Masashi Ukida, all of Okayama, Japan, assignors to Ouchi Shinko Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 22, 1979, Ser. No. 22,891

Claims priority, application Japan, Mar. 24, 1978, 53-32991

Int. Cl.[2] C25B *3/02;* **C07D** *213/48, 209/34, 210/00*

U.S. Cl. 204—78 **21 Claims**

1. A process for producing a sulfenimide which comprises subjecting a mixture of an imide of the formula:

wherein R is (1) a bivalent saturated or unsaturated, acyclic or cyclic hydrocarbyl group having from approximately 2 to approximately 10 carbon atoms, (2) a bivalent saturated or unsaturated acyclic group having from 2 to approximately 6 carbon atoms and having —O— and/or —NH— linkage therein, or (3) a bivalent heterocyclic group having from 6 to 8 carbon atoms including those containing an oxabicyclo structure with an organic disulfide selected from the group consisting of dialkyl disulfide wherein each alkyl group is acyclic of from 1 to 18 carbon atoms or is cyclic of 3 to 12 carbon atoms optionally substituted with a halo atom and diaryl disulfides wherein each aryl group is phenyl, tolyl, naphthyl, benzyl, or is a substituted phenyl or naphthyl group wherein said substituent is an alkyl group of up to 4 carbon atoms, a halo atom or a nitro group or is benzothiazyl,

or with a mercaptan selected from the group consisting of alkyl mercaptans of 1 to 5 carbon atoms, trichloromethyl mercaptan, phenyl mercaptan, chlorophenyl mercaptan, nitrophenyl mercaptan, benzyl mercaptan, naphthyl mercaptan and 2-mercaptobenzothiazole,

to electrolytic oxidation in an organic solvent selected from the group consisting of aprotic polar solvents and mixtures of a major quantity of aprotic polar solvent and a minor quantity of polar solvent or water.

4,219,394

MEMBRANE ASSEMBLY FOR ELECTROLYTIC CELLS

Andrew D. Babinsky, Chagrin Falls; Charles J. Hora, Painesville; Edward J. Peters, Chardon, and Wayne P. Zeman, Richmond Heights, all of Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

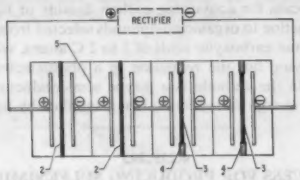
Continuation-in-part of Ser. No. 774,800, Mar. 7, 1977, abandoned. This application Mar. 22, 1978, Ser. No. 889,026

Int. Cl.[2] C25B *1/16, 1/26, 9/00, 13/02*

U.S. Cl. 204—98 **10 Claims**

7. In a monopolar chlor-alkali cell having a plurality of essentially vertically arranged parallel electrodes of one polarity extending downward into the cell with an essentially vertically arranged parallel electrode of opposite polarity extending

upwardly within the cell between each adjacent pair of downwardly extending electrodes, the improvement comprising a divider separating the anolyte and catholyte chambers, said divider consisting in part of open-top boxlike means of impermeable, nonconductive material enveloping each downwardly extending electrode and having window-like openings therein of hydraulically impermeable membrane, said membrane windows being of a size and shape conforming to substantially the



active electrode zones between said interacting electrodes and said membrane windows being positioned substantially directly between said interacting electrodes in said active electrode zones, each said open-top boxlike means being interconnected at their tops by a substantially horizontal hydraulically impermeable member which extends outwardly from the top of each boxlike means as to form a seal with the cell and adjacent boxlike means to completely separate the anolyte and catholyte chambers.

4,219,395

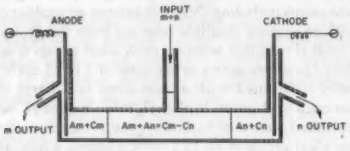
ELECTROCHEMICAL FRACTIONATION PROCESS

Maryanne Smith, deceased, late of Santa Monica, Calif., and by Arthur C. Smith, 624 Alta Ave., Santa Monica, Calif. 90402, executor

Continuation of Ser. No. 848,056, Aug. 6, 1969, abandoned. This application Feb. 28, 1972, Ser. No. 230,083

Int. Cl.[2] G01N *27/26;* **B03C** *5/00;* **C25B** *7/00*

U.S. Cl. 204—180 R **6 Claims**



1. A process for fractionating a mixture of difficult to separate dissolved materials of like ionic sign which may be all positive or all negative ions, where each of said materials to be separated will be refered to as a separant, comprising a solution containing said separants, one or more ligands that can combine with each said separant to form dissolved positively charged particles having the higher oxidation state called the oxidized state, and one or more additional ligands that can compete with said aforementioned ligands and combine with a portion of each said separants to form simultaneously dissolved negatively charged particles containing said separants in a lower oxidation state called the reduced state, where said dissolved ionic particles are known as separant-carriers, choosing said ligands such that the oxidation or reduction of a separant to its alternate oxidation state is accompanied by a sign change of its separant-carrier and such that there is for each said separant at least one separant-carrier that can react with at least one separant-carrier of opposite sign in each pair of positive and negative separant-carriers for each other said dissolved separant, where said pair is known as a separant pair, and simultaneously exchange oxidation state and sign in a time that is on the order of or shorter than the transit time of said separant-carriers through a theoretical plate based on a reaction time shorter than 10^{-7} seconds, placing said solution between two electrodes, the positive one known as the anode and the negative one known as the cathode, passing a current through the solution at a density insufficient to cause gross turbulence, which causes separant-carriers of opposite sign to course through each other in the process of ionic conduction, adjusting the concentration of said ligands to bring the transport of unseparated separants partitioned into carrier pairs to as near zero as practicable forming a quasi-isoelectric point, refluxing said separants transported by individual separant-carrier conduction by trapping them in a closed circuit reflux zone by oxidizing negative separant-carriers that enter an anode compartment into positive separant-carriers and by reducing positive separant-carriers that enter a cathode compartment into negative separant-carriers, inducing said oxidation/reduction by the direct anode/cathode electron reactions, holding said solution of separants in a steady state reflux until they have approximately reached equilibrium at which time the solution at the ends of the reflux zone will have reached a maximum of composition disproportionation and will be the maximum separation for the given voltage drop across the reflux zone.

4,219,396

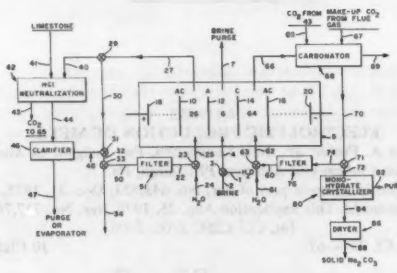
ELECTRODIALYTIC PROCESS

Alan B. Gancy, Syracuse, and Theodore J. Jenczewski, Sherrill, both of N.Y., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Aug. 3, 1979, Ser. No. 63,229

Int. Cl.[2] B01D *13/02*

U.S. Cl. 204—180 P **11 Claims**



1. A process for the electrodialysis of aqueous NaCl in an electrodialytic cell having anode and cathode compartments separated by acid, salt and base zones respectively which comprises the steps of:

(a) feeding an aqueous HCl stream to said acid zone of said electrodialytic cell located between the cation face of a bipolar membrane and one side of a weakly basic anion permselective membrane;

(b) feeding an aqueous NaCl stream to said salt zone located between the other face of said weakly basic anion membrane and one face of a strongly acidic cation permselective membrane;

(c) feeding an aqueous Na_2CO_3 stream to said base zone located between the other face of said cation permselective membrane and the anion face of a bipolar membrane;

(d) passing a direct electric current through said electrodialytic cell, thereby effecting an increase in H^+ concentration in said HCl stream, an increase in OH^- concentration in said Na_2CO_3 stream, the transfer of Cl^- from said NaCl stream to the acid-enriched HCl stream and the transfer of Na^+ from said NaCl stream to the OH^- *-enriched* Na_2CO_3 stream;

(e) maintaining a pH of streams on both faces of said anion permselective membrane at a value less than about 7;

(f) withdrawing a portion of the partially depleted NaCl stream from said salt zone;

(g) withdrawing the HCl-enriched stream from said acid zone;

(h) withdrawing NaOH-enriched Na_2CO_3 stream from said base zone;

(i) contacting said NaOH-enriched Na_2CO_3 stream from step (h) with a carbonating agent thereby forming additional Na_2CO_3; and

(j) withdrawing at least a portion of said Na_2CO_3 stream as product.

4,219,397

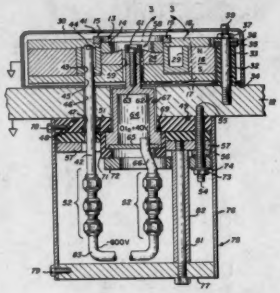
MAGNETRON SPUTTER APPARATUS

Peter J. Clarke, 760 Arcady Rd., Santa Barbara, Calif. 93108

Filed Nov. 24, 1978, Ser. No. 963,335

Int. Cl.² C23C *15/00*

U.S. Cl. 204—192 R **15 Claims**



1. In a magnetron sputter gun for establishing a glow discharge at subatmospheric pressure to produce sputtering of material from a cathode target onto a workpiece to be coated;

anode and cathode electrode means for operating at different electrical potentials to establish in use an electrical field intercepted by said cathode electrode means;

said cathode electrode means including a target portion means made of a material to be sputtered and for sputtering from said target portion means of said cathode electrode means onto the workpiece;

magnet means for providing a magnetic circuit for producing a magnetic field in the glow discharge region of space between said anode and said cathode electrode means, said magnetic field having a substantial component thereof orthogonally directed to the direction of the electric field component in the glow discharge region overlying said target portion means of said cathode electrode means; and

said cathode sputter target portion means comprising a main target loop portion means for sputtering therefrom a preponderance of the target material to be sputtered and a separate auxiliary target loop portion means of target material, said separate loop portion means being axially displaced and partially axially coextensive with respect to each other, and said auxiliary target loop portion means having a mean radius of curvature greater than that of said main target loop portion means.

13. In a method of operating a magnetron sputter gun for establishing a glow discharge at subatmospheric pressure to produce sputtering of material from a cathode target onto a workpiece to be coated:

providing anode and cathode electrodes for operation at different electrical potentials to establish an electrical field intercepted by said cathode;

said cathode electrode including a target portion made of a material to be sputtered from said target portion of said cathode electrode onto the workpiece;

energizing said anode and cathode electrodes to establish said electric field;

producing a magnetic field in the glow discharge region between said anode and cathode electrodes, said magnetic field having a substantial component thereof orthogonally directed to the electric field component in the glow discharge region overlying said target portion of said cathode electrode;

said cathode sputter target portion comprising a main target portion and an auxiliary target portion, said main target portion having two intersecting faces and being formed and arranged relative to the electric and magnetic fields in the glow discharge region for producing an erosion pattern of said main cathode target portion along said two intersecting faces; and sputtering material from said main target portion in such a manner that said two intersecting faces are maintained as receding intersecting faces during the time required to produce erosion of a preponderance of the volume of said main target portion of said cathode sputter target.

4,219,398

APPARATUS FOR CONTINUOUS MEASUREMENT OF GAS TRACES WITH ION-SENSITIVE ELECTRODES

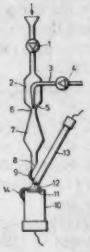
Ulrich Fritze, Cologne, and Heinz Herschinger, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 9, 1978, Ser. No. 904,344

Claims priority, application Fed. Rep. of Germany, May 24, 1977, 2723310

Int. Cl.² G01N *27/46*

U.S. Cl. 204—195 M **10 Claims**



1. An apparatus for measuring gas traces comprising: atomizer means receptive of a gas to be examined and an absorption liquid to continuously atomize the two together; collecting means having an inlet receptive of the atomized gas and liquid and an outlet disposed below the inlet and for collecting the liquid phase saturated with the gas at a lower portion thereof adjacent the outlet; electrochemical cell means receptive of liquid for producing an electrical signal dependent in value on the number of ions formed by the gas therein comprising a horizontal disc sensor electrode and a reference electrode disposed above the sensor electrode; and means for continuously feeding all of the collected liquid phase through the electrochemical cell means during measurement of the ions to maintain a vertical column of liquid on the sensor electrode and in contact with the reference electrode.

4,219,399
INTERNALLY, ELECTRICALLY HEATED ELECTROCHEMICAL SENSING ELEMENT

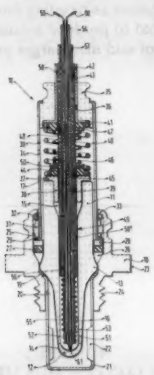
Heiko Gruner, Stuttgart; Franz Rieger, Aalen-Wasseralfingen, and Rainer Schüssler, Bietigheim, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 10, 1979, Ser. No. 74,125

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1978, 2841771

Int. Cl.³ G01N 27/58

U.S. Cl. 204—195 S 10 Claims



1. Electrically heated electrochemical sensing element to determine the oxygen content of a test gas, particularly exhaust gases from internal combustion engines, having

an ion conductive solid electrolyte tube (11) closed at one end, the outside of which is adapted to be exposed to the test gas and the inside to a reference gas, such as air;

a porous, conductive catalyzing layer (14) at least on a portion of the outside of said ion conductive tube and exposed to the test gas and an electrically conductive path extending for at least a portion along the length of the tube and electrically connected thereto;

an electrically conductive path (16) at the inside of the tube;

a housing or socket (18);

means (13; 26, 27, 28, 29, 31, 32, 33) securing said tube (11) in the socket;

means (17, 34, 40, 41, 42) providing an external electrical connection to at least one of said paths, and including a first compression spring (40) and an elongated electrode connection element (42) extending outside of the socket and insulated therefrom;

an internal heating rod (49) extending into the interior of the tube adjacent the closed end thereof, and positioned centrally within the compression spring (40);

and means securing the heating rod within the solid electrolyte tube (11)

comprising, in accordance with the invention,

a mounting flange (50) projecting radially from the heating rod intermediate the length thereof;

a second compression spring (46) of smaller diameter than said first spring (40) bearing against said flange and located within said first spring;

cap means (35) secured to the socket and accepting the compressive forces of said springs (40, 46);

insulating bushings (44, 47) electrically insulating said springs from each other;

and mutually insulated elongated conductive elements (52, 56) extending axially parallel to the electrode connection element and forming external heating connection terminals for said heating rod (49).

4,219,400
ELECTROLYSIS CELL

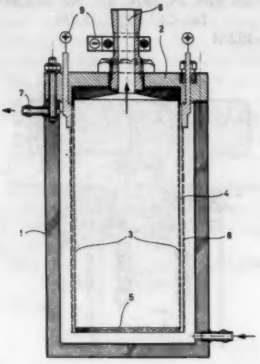
Wolfram Treptow, Ludwigshafen; Gerd Wunsch, Speyer; Volker Kiener, Weisenheim; Hermann Meyer, Frankenthal, and Gotthard Csizi, Bad Durkheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 804,460, Jun. 7, 1977, abandoned. This application Oct. 3, 1978, Ser. No. 948,160

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1976, 2630883

Int. Cl.² C25B 9/00

U.S. Cl. 204—266 6 Claims



1. An electrolysis cell with metal cathodes and anodes provided with openings, in which the cathode chamber and anode chamber are separated from one another by a diaphragm, wherein a porous layer, which is from 50 to 500 μm thick and contains at least one inorganic oxide or oxidic compound of an element of sub-group 4B of the periodic table, of aluminum, of the rare earths and of chromium, the layer having been applied by the plasma-spraying process or flame-spraying process to that side of one of the metal electrodes which faces the counter-electrode, is used as the diaphragm.

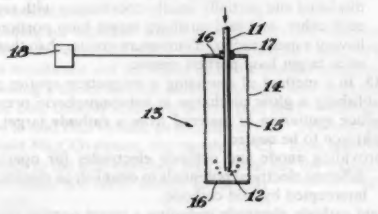
4,219,401
METAL ELECTROWINNING FEED CATHODE

David R. Johnson, Midland, Mich., assignor to The D-H Titanium Company, Midland, Mich.

Continuation-in-part of Ser. No. 722,851, Sep. 13, 1976, Pat. No. 4,113,584, which is a continuation-in-part of Ser. No. 517,568, Oct. 24, 1974, abandoned. This application Aug. 7, 1978, Ser. No. 931,089

Int. Cl.² C25C 7/02, 3/14

U.S. Cl. 204—284 16 Claims



1. A feed cathode for an electrolytic cell comprising a multivalent metal compound feed conduit with at least one outlet suited to pass a metal compound therethrough from a metal compound source to an electrolyte in the electrolytic cell, a member surrounding and substantially entirely enclosing at

least the outlet of said conduit, said member being at least partially formed of an electrically conductive foraminous body suited to pass ions of the multivalent metal compound and electrolyte therethrough, with at least the surface of the foraminous body consisting essentially of cobalt.

4,219,402

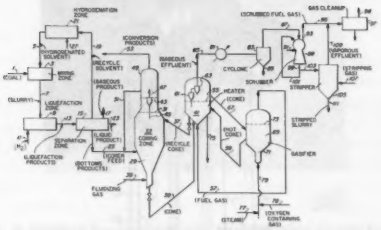
INTEGRATION OF STRIPPING OF FINES SLURRY IN A COKING AND GASIFICATION PROCESS

Charles W. DeGeorge, Chester, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 30, 1978, Ser. No. 910,451

Int. Cl.[2] C10G *1/04, 9/32*; C10K *1/08*

U.S. Cl. 208—8 LE **12 Claims**



1. In an integrated coking and gasification process comprising the steps of:

(a) reacting a carbonaceous material in a coking zone containing a bed of fluidized solids maintained at fluid coking conditions to form coke, said coke depositing on said fluidized solids;

(b) introducing a portion of said solids with the coke deposit thereon into a heating zone operated at a temperature greater than said coking zone temperature to heat said portion of solids;

(c) recycling a first portion of heated solids from said heating zone to said coking zone;

(d) introducing a second portion of said heated solids to a fluid bed gasification zone maintained at a temperature greater than said heating zone;

(e) reacting said second portion of heated solids in said gasification zone with steam and an oxygen-containing gas to produce a hot gaseous stream comprising hydrogen;

(f) introducing said hot gaseous stream comprising hydrogen and entrained solids into said heating zone;

(g) passing an additional stream of solids from said gasification zone to said heating zone;

(h) recovering from said heating zone the resulting cooled gaseous stream comprising hydrogen, acidic gases and entrained solids;

(i) separating at least a portion of said entrained solids from said cooled gaseous stream of step (h);

(j) scrubbing the resulting gaseous stream containing said solids with a liquid to form a liquid-solids slurry containing acidic gases and a gaseous stream of decreased solids content;

(k) passing the gaseous stream resulting from step (j) to an acidic gases removal zone to recover a gas product;

(l) passing the liquid-solids slurry to a stripping zone for removal of acidic gases;

the improvement which comprises passing the resulting acidic gases-containing vaporous effluent of the stripping zone directly to said acidic gases removal zone of step (k).

4,219,403

COAL LIQUEFACTION PROCESS AND APPARATUS THEREFOR

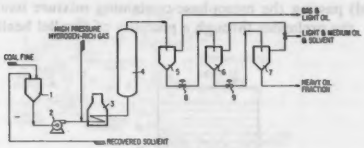
Yukio Nakako, Nishinomiya, and Shizuo Yokota, Kobe, both of Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Continuation-in-part of Ser. No. 801,920, May 31, 1977, abandoned. This application Jun. 14, 1978, Ser. No. 915,575

Claims priority, application Japan, May 28, 1976, 51-62811; May 28, 1976, 51-62812; May 28, 1976, 51-62813; May 28, 1976, 51-62814; May 28, 1976, 51-62815

Int. Cl.[2] C10G *1/06*

U.S. Cl. 208—10 **12 Claims**



1. A coal liquefaction process which comprises:

admixing coal fines with a hydrocarbon solvent having a boiling point greater than 150° C. to form a coal slurry;

admixing with said coal slurry a hydrogen-rich gas;

hydrogenating said coal slurry by heating said hydrogen-containing admixture at a temperature of from 300° to 500° C. and a pressure of from 50 to 700 atms whereby said coal fines are liquified and a solid-liquid admixture is formed;

separating said liquid-solid admixture into liquid and solid fractions; and

dehydrogenating and cyclopolycondensing said liquid fraction at a temperature of from 400° to 500° C. and a total pressure of 70–150 atms in the presence of hydrogen at a low partial pressure wherein said low partial pressure of hydrogen is in the range of 7 to 70% of said total pressure, to produce an aromatic-rich heavy oil product.

4,219,404

VACUUM OR STEAM STRIPPING AROMATIC OILS FROM PETROLEUM PITCH

Ghazi Dickakian, Scotch Plains, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jun. 14, 1979, Ser. No. 48,507

Int. Cl.[2] C10C *3/00*

U.S. Cl. 208—39 **9 Claims**

1. A process for preparing a feedstock capable of being converted into a deformable pitch containing greater than 75% of an optically anisotropic phase comprising: removing from 40% to 90% of the aromatic oils present in isotropic carbonaceous residues of petroleum origin by vacuum or steam stripping and thereafter heat soaking the balance of the residue at temperatures in the range of 350° C. to 450° C. for times ranging generally from about 5 minutes to 10 hours.

4,219,405

METHOD OF CONTINUOUSLY PRODUCING COKE

Gerhard Pietzka, Vockenhausen; Harald Tillmanns, Kelkheim, and Ingo Romey, Hünxe, all of Fed. Rep. of Germany, assignors to Sigri Elektrographit GmbH, Meitingen and Bergwerksverband GmbH, Essen, both of, Fed. Rep. of Germany

Filed Sep. 28, 1978, Ser. No. 946,535

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1977, 2747495

Int. Cl.[2] C10G *9/14*

U.S. Cl. 208—50 **23 Claims**

1. A process for the continuous production of coke, which comprises

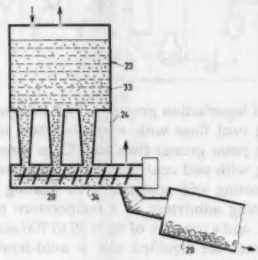
(a) introducing a cokable liquid hydrocarbon mixture together with condensed vapor fractions produced in the

process into a preheater maintained at an overhead temperature of from 280° to 320° C. and at a bottoms temperature of from 380° to about 440° C.,

(b) passing the mixture of hydrocarbon mixture and condensed vapor fractions through the preheater at such a rate to form a mesophase-containing mixture issuing from the preheater having a mesophase content of from 30 to 60%,

(c) releasing vaporous products containing condensible vapors from the preheater and returning at least a portion of the condensible vapors as a condensed vapor fraction produced in the process and mixed with the cokable hydrocarbon mixture,

(d) passing the mesophase-containing mixture issuing from the preheater through a plurality of parallel heating tubes



in a coking zone and heating said mixture in the tubes to a temperature of from 420° to about 480° C.,

(e) moving the mesophase-containing mixture through the coking zone at such a rate to form a green coke having a mesophase content of from 70 to 100%,

(f) removing vaporous products containing condensible vapors from the coking zone and returning at least a portion of the condensible vapors as a condensed vapor fraction produced in the process and mixed with the cokable hydrocarbon mixture,

(g) continuously removing the green coke from the coking zone, and

(h) introducing the green coke into a calciner and calcining the green coke by heating to a temperature of from 1100° to 1400° C.

4,219,406

CATALYTIC CRACKING WITH ZEOLITE-CONTAINING SILICA-ALUMINA HYDROGEL CATALYST

Guenter H. Kuehl, and Howard S. Sherry, both of Cherry Hill, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 15, 1976, Ser. No. 732,553
Int. Cl.[2] C10G *11/04;* B01J *29/08*
U.S. Cl. 208—120 **6 Claims**

1. A process for cracking a hydrocarbon charge under cracking conditions by contacting said hydrocarbon charge with an attrition asistant cracking catalyst prepared by the steps comprising:

(1) nozzle-mixing of an acid alum stream with a second stream comprising sodium silicate, alkali metal hydroxide and suspended fines;

(2) forming droplets of the resulting sol and causing them to gel;

(3) exchanging the gel by contacting same, in order, with (a) an ammonium salt solution, (b) an aluminum salt solution and (c) a rare earth salt solution;

(4) washing with water;

(5) homogenizing;

(6) spray drying;

(7) impregnating with rare earth ions; and

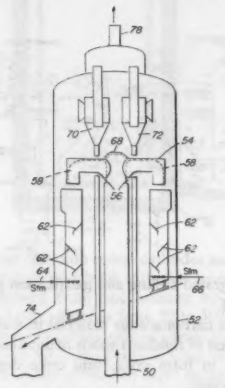
(8) drying.

4,219,407

FLUID CRACKING PROCESS AND THE METHOD FOR SEPARATING A SUSPENSION DISCHARGED FROM A RISER CRACKING ZONE

James H. Haddad, Princeton Junction, N.J.; Scott A. Heffley, Bolingbrook, Ill., and Hartley Owen, Seven Oaks, England, assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 728,100, Sep. 30, 1976, abandoned. This application Jan. 20, 1978, Ser. No. 871,044
Int. Cl.[2] B01D *45/06;* B01J *37/14;* C10G *11/18*
U.S. Cl. 208—151 **11 Claims**



1. In a fluid catalyst process comprising cracking a suspension of hydrocarbon reactant and catalyst at a temperature above 950° F. in a riser conversion zone and thereafter regenerating catalyst recovered from said riser conversion zone to heat said catalyst and remove carbonaceous deposits before return to said riser conversion zone, the improvement for separating the hydrocarbon-catalyst suspension upon discharge from the riser conversion zone which comprises,

discharging the suspension outwardly through openings in the upper periphery of the riser beneath radially extending restricted catalyst collecting passageways open on the bottom side thereof and providing a substantial confined catalyst stream generally separate from hydrocarbon vapors discharged from the riser beneath the confined catalyst stream,

said catalyst collecting passageways curved downwardly adjacent the outer end thereof to induce a downward moment on said confined catalyst stream in said passageway sufficient to direct said stream downwardly into the open upper end of a catalyst downcomer passageway positioned to maintain catalyst so collected and directed separate from said discharged hydrocarbon vapors, and

employing stripping gas to further promote the separation of catalyst and hydrocarbon vapors discharged from said riser.

4,219,408

MAGNETIC SEPARATION OF MINERALS UTILIZING MAGNETIC PARTICULATES

William M. Price, St. Austell, England, and Alan J. Nott, Huelgoat, France, assignors to Anglo-American Clays Corporation, Sandersville, Ga.

Continuation-in-part of Ser. No. 618,347, Oct. 1, 1975, Pat. No. 4,087,004, Ser. No. 753,201, Dec. 22, 1976, Pat. No. 4,125,460, and Ser. No. 856,267, Dec. 1, 1977. This application Apr. 27, 1978, Ser. No. 900,809

The portion of the term of this patent subsequent to May 2, 1995, has been disclaimed.

Int. Cl.[2] B03B *1/04*; B03C *1/00*

U.S. Cl. 209—5 **10 Claims**

1. A method for magnetically beneficiating an ore by separating therefrom an inorganic metal oxide of inherently low magnetic attractability which is present in said ore as an undesired species, comprising:

forming a dispersed aqueous slurry of said ore including said metal oxide;

mixing said slurry with a system of transiently suspended ferrimagnetic particles of predominantly colloidal size, said particles being further characterized by an isoelectric point in relation to the metal oxide sought to be separated, such that said particles spontaneously co-flocculate with said oxide to seed same;

passing the resultant seeded slurry through a porous ferromagnetic matrix in the presence of a magnetic field, to separate said seeded metal oxide at said matrix; and recovering as product the beneficiated ore emerging from said matrix.

4,219,409

INLET LINE DEFLECTOR AND EQUALIZER MEANS FOR A CLASSIFYING CYCLONE USED FOR WASHING AND METHOD OF WASHING USING DEFLECTORS AND EQUALIZERS

Delbert I. Liller, Rte. 4, Box 64, Deer Park, Md. 21550

Filed Dec. 14, 1977, Ser. No. 860,330

Int. Cl.[2] B03B *7/00*

U.S. Cl. 209—13 **26 Claims**

12. In a continuous coal washing method in a plant comprising a plurality of bunched centrifugal cyclones; each fed from a pump with a slurry of crushed raw coal and water in a slurry tank for gravity separation by the bunched cyclones to produce light clean coal and heavy refuse, the celan coal consisting of coarse coal particles in water circulating in a coarse clean coal circuit, and fine coal particles circulating in a fine clean coal circuit, that improvement comprising;

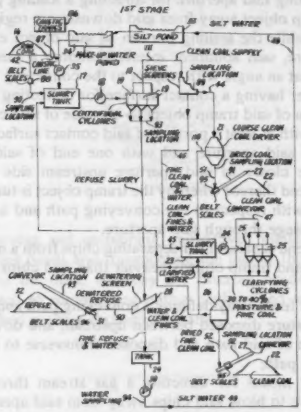
pumping the slurry approximately equally to each of the bunched cyclones;

installing a deflection surface having a flat body portion and an inwardly displaced bottom portion into the inlet pipe of the cyclone at three critcal angles relative to the inlet pipe and cyclone bowl;

(1) a center angle made by the inwardly displaced bottom of the surface relative to the pipe center line being between 116° and 148°;

(2) the deflection angle made by the flat body portion relative to the non-tangential feed pipe wall being between 8° and 12°; and

(3) the included angle between the radius of the cyclone bowl and the flat body portion being between 120° and 170° to thereby separate clean coal at the output at the top and refuse at the bottom of the cyclone;



dewatering and screening the coarse coal particles in the coarse clean circuit to separate coarse coal and fine particles in water;

conveying by gravity the dewatered coarse particles to a dryer at a drying station;

drying in a centrifugal dryer to provide a coarse particle part of the disired clean coal product;

conveying a first part of the separated fine coal particles in a first fine coal circuit;

dewatering the first part of the fine coal particles which are suspended in water in a clarifying cyclone.

4,219,410

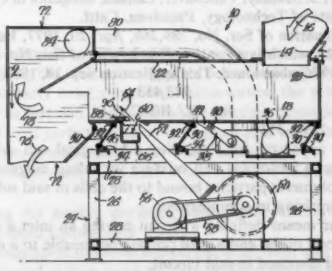
BAR END SEPARATOR

Gary A. Herder, Kalamazoo, Mich., assignor to Prab Conveyors, Inc., Kalamazoo, Mich.

Filed Nov. 15, 1978, Ser. No. 960,921

Int. Cl.[2] B07B *7/04*

U.S. Cl. 209—143 **6 Claims**



1. A bar end separator for separating chips from a mixture of

such chips and tramp objects heavier than said chips comprising:

a generally horizontally disposed mixture feeder tray defining a conveying path and defining an aperture disposed (1) between substantially coplanar upstream and downstream regions of said path and (2) transverse to said conveying path;

means for oscillating said feeder tray to convey said mixture along said path into said aperture;

a blower means for directing a gas stream through said aperture to blow said chips away from said aperture into a separate chip processing path;

an abutment means at the downstream side of said aperture and along said aperture for directing a leading portion of a tramp object away from said downstream region of said path while the trailing portion of said object enters said aperture, said abutment means including a member disposed at an angle with respect to the conveying path, said member having a contact surface for deflecting a leading portion of said tramp object to one side of said conveying path with at least a portion of said contact surface located within said aperture and with one end of said contact surface closer to said aperture upstream side than the other end thereof whereby the tramp object is turned at an angle with respect to the conveying path and is oriented for passage through said aperture.

5. A bar end separator for separating chips from a mixture of such chips and tramp objects heavier than said chips comprising:

a mixture feeder tray defining a conveying path and defining an aperture disposed between upstream and downstream regions of said path and disposed transverse to said conveying path;

a blower means for directing a gas stream through said aperture to blow said chips away from said aperture into a separate chip processing path;

an abutment means at the downstream side of said aperture and along said aperture for directing a leading portion of a tramp object away from said downstream region of said path while the trailing portion of said object enters said aperture whereby said tramp object is oriented for passage through said aperture, said abutment means including a member disposed at an angle with respect to the conveying path, said member having a contact surface for deflecting a leading portion of said tramp object to one side of said conveying path and extending substantially across said conveying path with at least a portion of said contact surface located within said aperture and with one end of said contact surface closer to said aperture upstream side than the other end thereof whereby the tramp object is turned at an angle with respect to the conveying path and is oriented for passage through said aperture.

4,219,411
CELL SORTING APPARATUS

Shiao-Ping S. Yen; Alan Rembaum, both of Altadena, Calif., and Robert S. Molday, Vancouver, Canada, assignors to California Institute of Technology, Pasadena, Calif.

Continuation of Ser. No. 789,268, Apr. 20, 1977, Pat. No. 4,157,223, which is a continuation-in-part of Ser. No. 694,151, Jun. 9, 1976, abandoned. This application Sep. 18, 1978, Ser. No. 943,453

Int. Cl.² B03C *1/14*

U.S. Cl. 209—213 **8 Claims**

1. An apparatus for separating a biological cell subpopulation from a biological cell mixture including magnetic functional polymeric particles bound to the cells of said subpopulation comprising in combination:

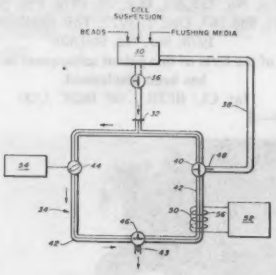
tubular means defining a circuit having an inlet a first and second outlet and a wall portion permeable to a magnetic field disposed in said circuit;

first two-way valve means mounted in said circuit and connected to said first outlet;

second two-way valve means mounted in said circuit and connected to said second outlet;

magnetic field means mounted to generate a magnetic field adjacent said wall portion;

a mixing chamber having a particle inlet, a cell suspension inlet, flushing media inlet, recycle inlet and an outlet



connected by means of a third valve to the inlet to the circuit;

pump means for pumping particle or cell suspension through said circuit; and

a recycle conduit connected to said second outlet to the recycle inlet.

4,219,412
SCREENING MACHINES

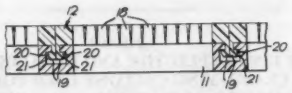
Anthony G. Hassall, Sandiway, England, assignor to N. Greening Limited, Great Britain

Filed Sep. 14, 1977, Ser. No. 833,314

Claims priority, application United Kingdom, Apr. 7, 1977, 14738/77

Int. Cl.² B07B *1/46*

U.S. Cl. 209—399 **5 Claims**

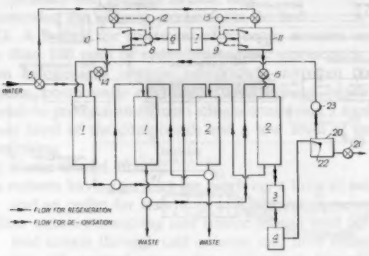


1. A modular seive screen for a screening machine comprising a plurality of seive elements secured to a support frame in the form of a lattice moulded from synthetic plastic material, each said element having a lug formed by an undercut peripheral depending skirt engaging a corresponding recessed side wall of a groove in said frame, the cross members of the lattice being spaced so that each apperature of the lattice will be obscured by a different one of the plurality of seive elements, said support frame having a plurality of attachment bars projecting from the undersurface of and at intervals along the length of the support frame to extend across the width thereof, the support frame being supported by a support structure comprising a plurality of spaced support barseach bar being provided at intervals along its length corresponding to the intervals of the attachment bars of the frame with apperatures of a shape to receive said attachment bars.

4,219,413
METHOD AND APPARATUS FOR TREATING WATER

Stephen Jackson, Oadby, and Geoffrey A. Roulstone, Loughborough, both of England, assignors to Fisons Limited, London, England

Filed Apr. 26, 1978, Ser. No. 900,152
Claims priority, application United Kingdom, May 3, 1977, 18391/77
Int. Cl.[2] C02B 1/76
U.S. Cl. 210—25 8 Claims



1. An apparatus for the treatment of water which apparatus comprises at least one container of an ion exchange resin through which water is adapted to pass in contact with the resin; means for measuring the quality of water which has been treated in the container; at least one storage tank in valved communication with the container and for containing a reagent to regenerate the resin in the container; pneumatic means for supplying measured quantities of reagent from a reservoir to the storage tank; and means for supplying water to the storage tank in proportion to the amount of reagent fed thereto, so as to dilute the reagent in the storage tank; two different ion exchange resins in separate containers and a reagent supply means for each ion exchange resin; and wherein there is provided interlocking control means including: (a) first control means responsive to said means measuring the quality of the water detecting that the quality of the treated water is below the desired level, for stopping the flow of water to the containers and placing the storage tanks in fluid flow connection via the respective containers to waste to regenerate the respective ion exchange resins in the containers, (b) second control means for feeding reagent and water to the appropriate storage tanks (10 or 11) in the desired proportion and for replenishing the tanks (10 or 11) with reagent and water when the level therein drops to a given level, and (c) third control means actuable upon regeneration of the respective resin in the containers (1 and 2) to the desired extent, for placing the containers (1 and 2) in fluid flow communication with a supply of water to be treated.

4,219,414
METHOD FOR FLUID PURIFICATION AND DEIONIZATION

George J. Crits, Havertown, Pa., assignor to Crane Co., New York, N.Y.

Filed Oct. 12, 1978, Ser. No. 950,921
Int. Cl.[2] B01D 15/06, 29/38
U.S. Cl. 210—27 6 Claims

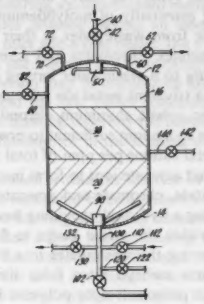
1. A method for continuously removing undissolved matter from fluid and for selectively deionizing the fluid when the undesired ion concentration exceeds a predetermined level comprising:

A. passing the fluid through a tank containing filtering beads adapted to remove and entrap undissolved matter from but not to deionize the fluid;

B. adding ion exchanges resin of a density lower than that of the filtering beads to remove the undesired ions from the fluid when the concentration of undesired ions exceeds the predetermined level.

C. Separating hydraulically the ion exchange resin from the filtering beads prior to the resin being sluiced from the tank.

D. removing the ion exchange resin, when exhausted, from the tank by sluicing; and,

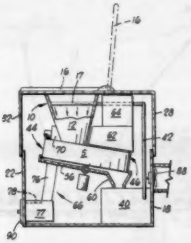


E. removing and entrapping undissolved matter from the filtering beads and transporting the matter thus removed out of the tank, whereby the filtering beads are again adapted to remove and entrap undissolved matter from the fluid passing through the tank.

4,219,415
METHOD AND APPARATUS FOR DISPOSAL OF ORGANIC WASTES

N. A. Nassef, 11562 Clear Creek Dr., Pensacola, Fla. 32504, and Leale E. Streebin, 2301 Morgan Dr., Norman, Okla. 73069

Filed Aug. 9, 1978, Ser. No. 932,347
Int. Cl.[2] B01D 23/14; C02C 1/22
U.S. Cl. 210—32 23 Claims



1. A method for treating aqueous organic waste comprising:

depositing the waste on a porous bed of activated carbon;

concurrently irradiating with microwaves, the solid waste on the bed and the liquid waste filtering through the bed and solid particles filtered from the liquid waste within the bed, to sterilize all of said waste materials;

removing the sterilized solid waste from the bed and storing it;

heating the stored, sterilized solid waste to convert it to activated carbon; and

replacing spent depleted carbon particles from said bed with activated carbon particles derived from the conversion of stored, sterilized solid waste.

4,219,416
PROCESS FOR RECOVERING MOLYBDENUM AND TUNGSTEN FROM MINING WASTEWATER

Ernest R. Ramirez, Lemont, Ill., and Gopalan Ramadorai, Fullerton, Calif., assignors to Dravo Corporation, Pittsburgh, Pa.

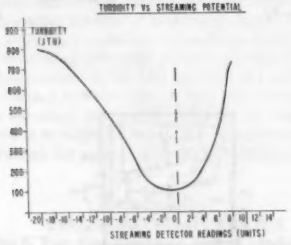
Filed Jun. 29, 1978, Ser. No. 920,259
Int. Cl.[2] C02B *1/20*; C02C *5/12*
U.S. Cl. 210—44 **10 Claims**

1. A method for removing heavy metals selected from the group consisting essentially of molybdenum, tungsten, chromium and arsenic from wastewater in their anionic forms as molybdates, tungstates, chromates and arsenates comprising the steps of adding to a wastewater having a pH of between about 2.0 to 6.0, a trivalent metal ion selected from the group consisting of ferric, cobalt, aluminum, chromium or rhenium to the wastewater in an amount sufficient to provide from 6 to 20 ppm trivalent metal cations per ppm of total molybdate, tungstate, chromate and arsenate ions to form insoluble heteropoly molybdate, tungstate, chromate and arsenate salts within the wastewater; adding a hydroxyl providing base to raise the pH yet maintain it within the acidic range to form a gelatinous precipitate; subjecting the wastewater to a dense zone of microbubbles to form embryo flocs from the insoluble salts; adding an anionic polyelectrolyte polymer flocculant to the wastewater; and thereafter subjecting the wastewater to an additional dense zone of microbubbles to form from the embryo flocs full flocs that are buoyed to the surface.

4,219,417
WASTEWATER FLOTATION UTILIZING STREAMING POTENTIAL ADJUSTMENT

Ernest R. Ramirez, Lemont, Ill., assignor to Dravo Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 752,908, Dec. 21, 1976, abandoned. This application Oct. 25, 1978, Ser. No. 954,359
Int. Cl.[2] B03D *1/00*; C02C *5/02*
U.S. Cl. 210—44 **11 Claims**

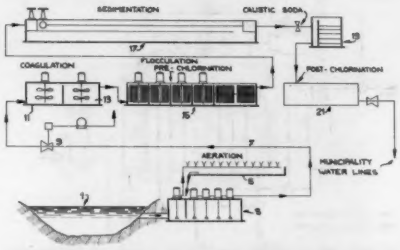


1. A method for removing particulates from wastewaters by flotation, comprising: obtaining a supply of wastewater having charged particulate matter; adjusting the streaming potential of particulates in the wastewater to approximately zero, in the absence of any added trivalent metal coagulant compounds, by adding to the wastewater a non-coagulant chemical consisting essentially of an inorganic mineral acid or base; forming a flow path of the thus adjusted wastewater to a confined location; supplying dense quantities of small bubbles within said confined location; entering overflow from the confined location into a long flotation zone; baffling the overflow by flowing through perforated baffles in said flotation zone; said flotation zone having a downstream, quiescent portion; forming buoyant floc in the long flotation zone; and separating the floc from the wastewater.

4,219,418
WATER TREATMENT PROCESS

Jacques Pilon, 94, Duvernay, St-Jerome, Comte Terrebonne, Quebec, Canada

Continuation of Ser. No. 505,521, Sep. 12, 1974, abandoned, which is a continuation-in-part of Ser. No. 364,706, May 29, 1973, abandoned. This application Jun. 21, 1978, Ser. No. 917,570
Int. Cl.[2] C02B *1/20*, *1/36*
U.S. Cl. 210—50 **22 Claims**



1. A process for the production of odorless and colorless drinking water from polluted water containing papermill waste products and algae, which comprises:

(a) treating said highly polluted water with hydrogen peroxide in an amount of from 1 to 10 p.p.m. calculated by weight with respect to the quantity of water being treated and alum;

(b) allowing flocculation and then sedimentation to take place, while pre-chlorinating the treated water by subjecting it to the action of chlorine;

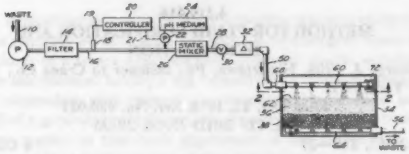
(c) filtrating the resulting water to remove therefrom solid particles still in suspension; and,

(d) post-chlorinating the filtrated water by treating it with a liquid composition resulting from the mixture of 1.0 p.p.m. of chlorine, 0.5 to 1.0 p.p.m. of an alkali metal chlorate, 0.5 to 1.6 p.p.m. of a non-toxic mineral acid, and 0.5 to 1.0 p.p.m. of hydrogen peroxide, the amount of each being calculated by weight with respect to the quantity of water being treated.

4,219,419
TREATMENT OF REDUCIBLE HYDROCARBON CONTAINING AQUEOUS STREAM

Keith H. Sweeny, West Covina, Calif., assignor to Envirogenics Systems Company, El Monte, Calif.

Continuation-in-part of Ser. No. 780,849, Mar. 24, 1977, abandoned. This application Sep. 14, 1978, Ser. No. 942,336
Int. Cl.[2] C02C *5/02*
U.S. Cl. 210—59 **19 Claims**



1. A method of treatment of an aqueous stream containing below 100 ppm of reducible organic compounds selected from halogenated organic compounds, nitrogen containing organic compounds or hydroxyl containing organic compounds to produce an effluent stream containing 90% less of the compounds than the aqueous stream and containing a low level of metal ions comprising the steps of:

adjusting the pH of the stream to between 6 and 8;

flowing the stream through a permeable bed comprising 5 to 40% by weight of particulate, elemental metal reductant capable of reduction of said organic compounds, the remainder of said bed being finely divided, inert filter and the ratio of reductant to compound within said bed is at least 1000:1 and said metal reductant consisting of essentially a first metal selected from iron, aluminum, zinc, magnesium or cadmium and 0.1 to 10 meq per gram of reductant of at least one catalytic metal selected from copper, silver, cobalt or nickel;

reductively reacting the compounds with the reductant to produce said effluent stream; and

removing the effluent stream from the bed.

12. A system for treatment of aqueous streams containing less than 100 ppm of reducible organic compounds selected from halogenated organic compounds, nitrogen containing organic compounds or hydroxyl containing organic compounds to produce an effluent stream containing a significantly lower level of the compounds and a low level of metal ions comprising:

a source of said stream;

a column having an inlet for receiving a flow of said stream and an outlet for removing said effluent;

flow means connecting said source to said inlet for flowing said stream through said column; said flow means including pH control means for controlling the pH of said stream to a selected pH between 6 and 8; and

a permeable bed comprising 5% to 40% by weight of particulate, elemental metal reductant capable of reductive reaction with said organic compounds and the remainder of said bed being finely divided, inert filler, said metal reductant consisting of a first metal selected from iron, aluminum, zinc, magnesium or cadmium and 0.1 to 10 meq per gram of reductant of at least one cataytic metal selected from copper, silver, cobalt or nickel, said bed being constrained within said column between said inlet and outlet in which the ratio of reductant to compound is at least 1000:1 for reductive degradation of said compound to form an effluent leaving said outlet containing a significantly reduced level of compound.

4,219,420

ARRANGEMENT FOR AND A PROCESS OF FILTERING A CONTAMINATED MEDIUM

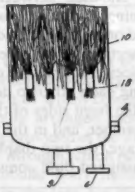
Hans Müller, Erlenbach, Switzerland, assignor to Chemap AG, Maennedorf, Switzerland

Filed Feb. 9, 1979, Ser. No. 10,884

Claims priority, application Switzerland, Mar. 2, 1978, 2264/78

Int. Cl.[2] B01D *29/08, 29/38, 37/00*

U.S. Cl. 210—82 **31 Claims**



1. A process for filtering a contaminated medium, comprising the following steps:

(a) connecting a plurality of elongated filtering fiber bundles to a support within a hollow filter housing, which housing has an inlet and an outlet spaced apart from each other, the location of the support and the location of the fibers being such that the fibers extend substantially parallel to a flow path extending from the inlet to the outlet and passing through the fiber bundles;

(b) introducing a contaminated medium into the housing through the inlet and causing it to travel through the fiber bundles along the flow path, whereby the medium is filtered;

(c) maintaining the orientation of the fiber bundles during the filtration process in substantially their original positions in a manner that the fiber bundles do not become compressed against the support; and

(d) withdrawing the filtered medium from the housing through the outlet.

15. A filter for filtering a contaminated medium, comprising:

(a) a hollow filter housing having an interior and further having a first inlet and a first outlet, the first inlet communicating with the interior of the housing whereby a contaminated medium may be introduced into the interior of the housing and the first outlet communicating with the interior of the housing whereby the medium may be withdrawn from the interior of the housing after the filtration process;

(b) a support located within the interior of the housing;

(c) a plurality of elongated filtering fibers located within the interior of the housing and being attached to the support in a manner that a flow path extending between the first inlet and the first outlet passes through the filtering fibers intermediate the inlet and outlet, whereby the medium is filtered as it passes along the flow path through the fibers; and

(d) alignment means for maintaining the orientation of the filtering fiber in a direction parallel to the flow path during the filtration process, whereby the tendency of the filtering fibers to compress against the support during the filtration process is minimized.

4,219,421

FILTER APPARATUS

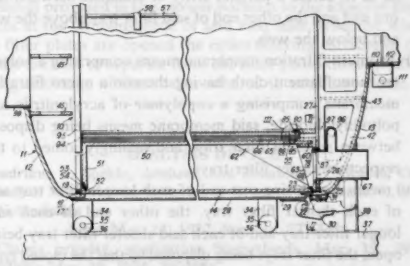
Richard H. Knibbs, Steventon, and Dennis Wood, Wallingford, both of England, assignors to The Secretary of State for Energy in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Jan. 29, 1979, Ser. No. 7,560

Claims priority, application United Kingdom, Feb. 13, 1978, 5584/78

Int. Cl.[2] B01D *25/12*

U.S. Cl. 210—98 **9 Claims**



1. A filter apparatus comprising,

(a) a demountable casing arranged to be disposed with the longitudinal axis thereof substantially horizontal, the casing having a fixed portion and a movable portion thereof, the movable portion comprising a tubular portion having at one end thereof a domed end cover having an inlet port for liquid to be filtered, the fixed portion comprising a domed end cover having an outlet port for filtrate and an inwardly directed flange defining a space between one side of the flange and the inside surface of the fixed portion end cover, the flange having a discharge duct at the top and at the bottom thereof, which discharge ducts extend through the fixed portion end cover so as to discharge liquid from the

other side of the flange through the fixed portion end cover to the other side of the fixed portion end cover, and having a feed duct at each side of the flange extending from a respective orifice in the flange so as to exhaust into a respective discharge duct;

(b) sealing means at the open end of the tubular portion;

(c) releasable means for clamping together the movable portion and the fixed portion;

(d) means for supporting the fixed portion;

(e) movable means for supporting the movable portion;

(f) a header plate comprising glass fibre reinforced plastics material secured in sealing engagement to said other side of the flange, the header plate having a plurality of apertures therethrough of horizontally elongate section and arranged one above the other, respective outlet orifices corresponding in position with that of the respective discharge ducts and the feed ducts, and a square section annular groove thereabout in that portion of the header plate between the orifices and the apertures thereof;

(g) grommet sealing means of elastomeric material located in a recess extending in the header plate around each said aperture;

(h) a filter unit comprising glass fibre reinforced plastics material and arranged to be situated inside the casing, the filter unit comprising,

(i) a square-shaped tube corresponding in section with the annular groove so as sealingly to locate in said groove, and having an outwardly directed flange at one end thereof for supporting said tube from the casing,

(ii) sealing means at the extremity of the outwardly directed flange so as to seal against the casing,

(iii) an odd number of filter trays comprising glass fibre reinforced plastics material located in the filter tube one above the other to form a stack, alternate filter trays in the stack being longer than the other filter trays and aligned with a respective elongate aperture in the header plate, and the shorter filter trays being disposed between and about the longer filter trays, each filter tray comprising a central web having upstanding and depending parallel ribs so as to define a parallel array of channels between said one end and the other end of said filter tray above the web and below the web,

(iv) a micro filtration membrane means comprising a polyester monofilament cloth having thereon a micro filtration membrane comprising a copolymer of acrylonitrile and polyvinylchloride, said membrane means being disposed between adjacent filter trays and sealingly joined to the respective longer filter trays,

(v) means for closing one end of each longer filter tray and of each shorter filter tray, the other end of each said longer filter tray and of each said shorter filter tray being open, the filter trays being disposed so that the closed ends of the shorter filter trays abut adjacent said grommet sealing means and the longer filter trays at the open ends thereof extend in sealing engagement inside a respective said grommet sealing means, each filter tray being shaped at each side thereof near the grommet means to define a vertically directed channel, and each said shorter filter tray having a port means near the closed end thereof for the flow of liquid from the channels in the shorter filter tray to the vertically directed channels,

(vi) port means at the top and at the bottom of the filter unit tube and aligned with the vertically directed channels, and

(vii) clamping means at the flanged end of the filter unit tube and arranged to bear against the filter trays.

4,219,422

APPARATUS FOR MASS TRANSFER BETWEEN FLUIDS, PROVIDED WITH AN INTERPOSED SELECTIVELY PERMEABLE DIAPHRAGM UNIT

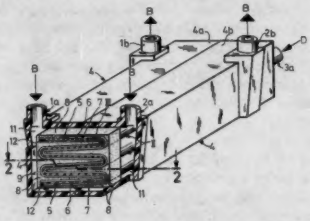
Erich Knothe, Bovenden, and Gerhard Lorenz, Krebeck, both of Fed. Rep. of Germany, assignors to Sartorius GmbH, Goettingen, Fed. Rep. of Germany

Filed Jan. 25, 1979, Ser. No. 6,384

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1978, 2803344

Int. Cl.[2] **B01D** *31/00*

U.S. Cl. 210—137 **20 Claims**



1. Apparatus for mass transfer between fluids, wherein a selectively permeable diaphragm unit is interposed between the fluids, the diaphragm unit being supported by a porous diaphragm support which is provided with flow channels for the masses to be transferred;

the diaphragm unit and the diaphragm support being positioned upon each other and pleated to a pleat package with parallel pleats;

the pleat package being enclosed in a box-like casing having walls;

the pleat grooves of one side being sealed off against the pleat grooves of the other side, and against the enclosing casing walls; and

the pleat grooves being connected with fluid flow inlets and outlets in the casing for receiving and discharging the fluids;

wherein the improvement comprises:

two diaphragm membranes with the diaphragm support sandwiched therebetween and jointly pleated to a pleat package such that

the pleats form three parallel and separate flow paths for the fluids with a multiplicity of the pleat grooves opening toward one casing wall forming a first flow chamber and a multiplicity of pleat grooves opening toward another casing wall forming a second flow chamber, and the diaphragm support enclosed between the two diaphragm membranes forming a third, hose-like flow chamber which is provided on at least one side of the pleat package with a fluid connection; and wherein

the diaphragm surfaces of the pleated diaphragm membranes are disposed facing each other to define narrow gaps and are sealed off at the front sides of the pleat package from the third flow chamber, and in the area of the front sides of the pleat package, the two diaphragm membranes are connected with assigned fluid connections.

4,219,423

AIR-INJECTION CLEANING SYSTEM FOR LIQUID FILTERS

Clarence G. Smith, Jr., Mountaintop, Pa., assignor to Muskin Corporation, Wilkes Barre, Pa.

Filed Sep. 27, 1978, Ser. No. 946,139

Int. Cl.[2] **E04H** *3/16*

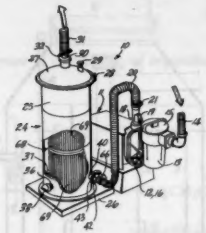
U.S. Cl. 210—169 **6 Claims**

1. A swimming-pool filter system, comprising:

a filter having a tank, a filtration element in the tank, a first outlet for delivering filtered water which has passed

through the element, and a second sealable outlet for exhausting water directed against the element in a cleaning cycle;

a pump having an inlet for receiving unfiltered water from the pool, and having an outlet conduit connected to the filter tank to deliver unfiltered water under pressure to the element; and



an air-injection valve on the pump conduit, the valve being movable between an open position in which air is injected into unfiltered water flowing from the pump to the element to dislodge accumulated dirt during a cleaning cycle, and a closed position in which air injection is terminated and the system operates in a normal filtration mode with the second outlet closed.

4,219,424

APPARATUS FOR ENRICHING OXYGEN CONTAINED IN WATER

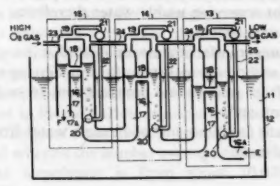
Takaaki Tamura; Tomeyoshi Ozawa; Wataru Ito; Norihiko Fujita, and Naoki Negishi, all of Tokyo, Japan, assignors to Industrial Research Institute, Tokyo, Japan

Continuation of Ser. No. 775,479, Mar. 8, 1977, abandoned. This application Sep. 12, 1978, Ser. No. 941,667

Claims priority, application Japan, Jun. 18, 1976, 51-72041; Aug. 13, 1976, 51-96784; Dec. 29, 1976, 51-160678

Int. Cl.[2] C02B *1/34;* C02C *5/04*

U.S. Cl. 210—201 **3 Claims**



1. An apparatus for the enrichment of dissolved oxygen in water in a tank comprising a plurality of dissolving devices located in the tank, each of which consists essentially of:

(a) a pair of vertically arranged tubular bodies, the first tubular body being provided at the lower end thereof with an inlet in the tank through which raw water is introduced and the second tubular body having at the lower end thereof an outlet in the tank for discharging oxygen enriched water;

(b) communicating means above said inlet and outlet providing communication for said water between said first and second tubular bodies, said water being at a level above said communicating means in each of said tubular bodies;

(c) a bubbler disposed in the lower interior end of said first tubular body for providing an oxygen enriched gas into the raw water and for causing the raw water to move into the interior of said second tubular body through said communicating means, said second tubular body providing gas-liquid separation means;

(d) means for connecting the interior of said first and second tubular bodies at the top ends thereof which ends form a chamber for said gas above the liquid level of the raw water in each of said first and second tubular bodies;

(e) means for supplying an oxygen enriched gas into said chamber in said second tubular body; and

(f) means for supplying the gas in said chambers to said bubbler.

4,219,425

FILTER PRESS

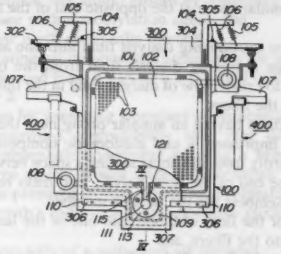
Takuji Yoshida, Osaka, Japan, assignor to NGK Insulators Ltd., Nagoya and Noritake Iron Works Co., Ltd., Osaka, both of, Japan

Filed Apr. 16, 1976, Ser. No. 677,841

Claims priority, application Japan, May 27, 1975, 50-64492

Int. Cl.[2] B01D *25/12*

U.S. Cl. 210—225 **7 Claims**



1. A filter press comprising a plurality of filter plates forming filter chambers therebetween when they are in close contact with each other, said filter plates being provided with a feed inlet at their lower ends outside of said filter chambers and formed with grooves for communicating the feed inlet with said filter chambers, and a pair of two filter cloths arranged between each two adjacent filter plates, said filter cloths covering the filter chamber portions of each filter plate and covering said communicating grooves, and said two filter cloths connected at upper portions thereof and secured at peripheries of openings provided in their lower portions to the adjacent filter plates at the circumference of said feed inlet, whereby when the filter plates are opened the entire filtering surfaces of the cloths are able to separate from the filter plates thereby facilitating discharge of filter cakes adhered to said filter cloths.

4,219,426

DIALYSIS DEVICE

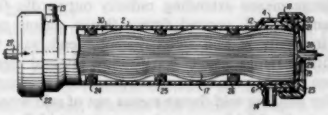
Hendrikus J. Spekle, Arnhem, and Johannes P. Brants, Oss, both of Netherlands, assignors to Organon Teknika B.V., Oss, Netherlands

Filed Mar. 14, 1977, Ser. No. 777,348

Claims priority, application Netherlands, Mar. 19, 1976, 7602880; Mar. 19, 1976, 7602881

Int. Cl.[2] B01D *31/00;* A61M *1/03*

U.S. Cl. 210—232 **16 Claims**



1. A dialysis device comprising

an elongated tubular member,

a ring with a diameter larger than the diameter of the tubular

member and disposed in concentric overlapping arrangement about each end portion of the tubular member secured thereto in radially outwardly spaced relationship to form an annular space therebetween, each end portion of said tubular member having circumferentially spaced crenels,

a bundle of hollow regenerated cellulose fibers disposed in the tubular member with ends disposed adjacent the ends of the tubular member,

longitudinally-spaced annular soft rubber-like rings substantially impassable to a liquid passing through said device and disposed in the tubular member about the bundle,

a solid elastomeric composition filling voids about the ends of the fibers and sealing the ends of the tubular member against longitudinal liquid flow therefrom, said composition also sealing the open ends of said annular space but not sealing all of the spaces between crenels whereby liquid can flow from an annular space into the space about the fibers in the tubular member at one end of the tubular member and out of the space in the tubular member into the annular space at the opposite end of the tubular member,

means for introducing dialysis fluid into one annular space,

means for removing dialysis fluid from the other annular space to create flow of dialysis fluid in the tubular member about the fibers,

convex disks having an annular prong near their peripheral edges impressed in said elastomeric composition radially outwardly from the fibers sealing a space between the disk and the end of the fiber bundle, said disks being end closure members for the tubular member,

means for the flow of blood into one of the last said spaces and into the fibers, and

means for the flow of blood from the second of the last said spaces.

4,219,427

CONICALLY SHAPED METAL SCREEN BODIES AND METHOD FOR MANUFACTURING SUCH BODIES

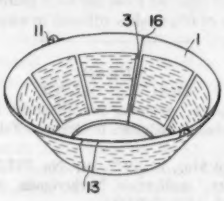
Ernst Heidborn, Brunswick, Fed. Rep. of Germany, assignor to Balco Filtertechnik GmbH, Brunswick, Fed. Rep. of Germany

Filed Mar. 27, 1979, Ser. No. 24,319

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1978, 2814359; Apr. 3, 1978, 7809821[U]

Int. Cl.[2] B01D *25/04, 33/02*

U.S. Cl. 210—497 R **10 Claims**



1. A one-piece, integral metal screen body for a centrifuge, comprising a screen member having a substantially conical shape with a large diameter end and a small diameter end, first fitting flange means extending radially outwardly from said large diameter end, second fitting flange means extending radially inwardly at said small diameter end, said first and second fitting flange means constituting integral elements of said screen member which has been deformed in a non-cutting manner for bending said flange means out of said screen member; as a result of said non-cutting manner, said flange means being dimensioned sufficient to eliminate vibration or flutter stress ruptures otherwise caused when said body is rotated at the highest limit of said centrifuge.

4,219,428

WATER RESERVOIR

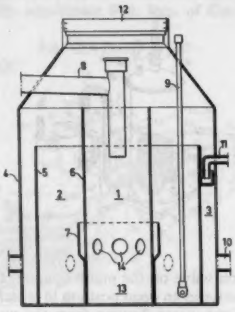
Gert Söderström, Hammarbyvägen 62, Upplands Väsby, Sweden (S-194 00)

Filed Nov. 3, 1978, Ser. No. 957,053

Claims priority, application Sweden, Nov. 3, 1977, 7712460

Int. Cl.[2] B01D *21/10*

U.S. Cl. 210—522 **8 Claims**



1. A water collection device for collecting surface water and/or waste water from various sources to provide a usable supply of water comprising:

a first compartment;

a water inlet to said first compartment;

a second compartment for retaining a usuable supply of water;

water seal means interconnecting said first and second compartments for directing water from said first compartment to said second compartment and maintaining a water seal therebetween irrespective of the water levels in said first and second compartments; said second compartment comprising a continuous upstanding wall which is imperforate at least from its bottom to the uppermost level of said water seal means;

a suction pipe immersed in the water in said second compartment for removing usable water therefrom;

a third compartment;

excess water transferring means located at the upper portion of said second compartment for transferring excess usable water from said second compartment to said third compartment; and

drain means for removing said excess water from said third compartment.

4,219,429

COMPOSITION AND PROCESS FOR STIMULATING WELL PRODUCTION

Joseph C. Allen, Bellaire, and Jack F. Tate, Houston, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

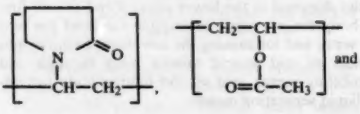
Filed May 22, 1978, Ser. No. 908,174

Int. Cl.[2] E21B *43/27*

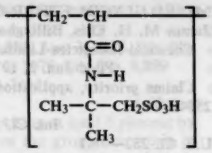
U.S. Cl. 252—8.55 C **10 Claims**

1. A well-acidizing composition comprising an aqueous solution of a mineral acid having dissolved therein a material selected from the group consisting of:

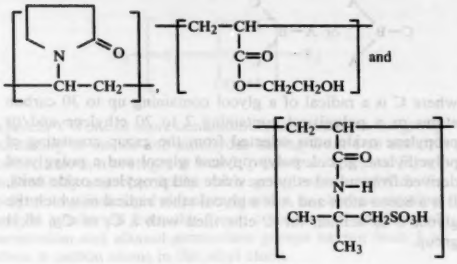
(I) Terpolymer A consisting of repeating units of:



-continued



(II) Terpolymer B consisting of repeating units of



and

(III) Terpolymer I or II alkoxylated with about 2 to about 100 weight percent of a substance selected from the group consisting of ethylene oxide and a mixture or ethylene oxide and propylene oxide wherein in the said mixture the weight percent of ethylene oxide ranges from about 60 to about 95,

the said mineral acid being present in an amount capable of reacting with the acid-soluble components of a subterranean fluid-bearing formation, wherein in Terpolymer A the weight percent of vinylpyrrolidone units will vary from about 65 to about 80, the weight percent of vinyl acetate units from about 8 to about 15 with the balance being 2-acrylamido-2-methylpropanesulfonic acid, wherein in Terpolymer B the weight percent of vinylpyrrolidone units will vary from about 65 to about 80, the weight percent of hydroxyethyl acrylate units from about 8 to about 15 with the balance being 2-acrylamido-2-methylpropanesulfonic acid, wherein the said terpolymer is present in the said acidic aqueous polymer solution in a concentration of from about 0.1 to about 10 weight percent and wherein the number average molecular weight of the said terpolymer is from about 10,000 to about 2,000,000.

4,219,430

MANNICH BASE COMPOSITION

Ronald J. Vaughan, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jun. 1, 1979, Ser. No. 44,605

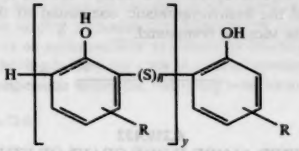
Int. Cl.[2] C10M *1/54*

U.S. Cl. 252—42.7 **7 Claims**

1. A Mannich base condensation product selected from the group consisting of

(A) the Mannich base prepared by first condensing formaldehyde and a polyamine with a sulfur-containing phenolic mixture consisting of

(1) from 5 to 40% of a sulfurized alkylphenol



wherein R is C_8–C_{36} alkyl, n is an integer from 1 to 8 and y is an integer from 1 to 9, and

(2) from 95 to 60% of a phenolic mixture consisting of

(a) from 95 to 30% phenol alkylated with propylene tetramer, and

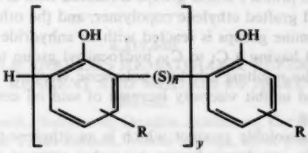
(b) from 5 to 70% phenol alkylated with a straightchain alpha olefin of from 16 to about 28 carbon atoms or with alpha olefin mixtures wherein the olefins are of from 16 to about 28 carbom atoms, followed by methylation of the resultant free amino groups by contacting said Mannich base with a methylation agent, and

(B) the alkaline earth metal salts thereof.

3. A lubricating oil composition comprising an oil of lubricating viscosity and from 0.1 to 40% by weight of the product of claim 1 or 2.

5. A process for preparing a product of reduced lead corrosivity and improved compatability with zinc di(isobutyl/-hexyl) dithiophosphate comprising reacting a Mannich base containing free amino groups with a methylating agent said Mannich base prepared by first condensing formaldehyde and a polyamine with a sulfur-containing phenolic mixture consisting of

(1) from 5 to 40% of a sulfurized alkylphenol



wherein R is a C_8–C_{36} alkyl, N is an integer from 1 to 8 and Y is an integer of from 1 to 9, and

(2) from 95 to 60% of a phenolic mixture consisting of

(a) from 95 to 60% of a phenol alkylated with propylene tetramer, and

(b) from 5 to 70% phenol alkylated with a straighchain alpha-olefin of from 16 to about 28 carbon atoms or with alpha-olefin mixtures wherein the olefins are of from 16 to about 28 carbom atoms.

4,219,431

AROYL DERIVATIVES OF ALKENYLSUCCINIC ANHYDRIDE AS LUBRICANT AND FUEL ADDITIVES

Sheldon Chibnik, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 542,474, Jan. 20, 1975, abandoned. This application Jul. 28, 1976, Ser. No. 709,489

Int. Cl.[2] C10L *1/18, 1/22;* C10M *1/26, 1/36*

U.S. Cl. 252—33.4 **43 Claims**

1. A lubricant and fuel composition comprising a member selected from the group consisting of a lubricating oil, a grease thereof and a liquid hydrocarbon fuel and a detergent amount of the product of reaction between an alkenylsuccinic acid, anhydride or ester, wherein the alkenyl group is a C_{25}–C_{300} unsaturated hydrocarbon, and a hydroxyaromatic compound and the alkyl-substituted members thereof, the reaction being run such that (1) there are from about 0.1 to about 10 moles of hydroxyaromatic compound per mole of the alkenylsuccinic

compound, (2) the temperature is at from about −20° C. to about 225° C. and (3) there is a catalyst present to direct the addition of the hydroxyaromatic compound to the alkenyl group of the succinic compound.

4,219,432

STABILIZED AMIDE-IMIDE GRAFT OF ETHYLENE COPOLYMERIC ADDITIVES FOR LUBRICANTS

Salvatore J. Girgenti, Westfield, and John B. Gardiner, Mountainside, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 14, 1979, Ser. No. 12,068

Int. Cl.[2] C10M *1/32*

U.S. Cl. 252—51.5 A 6 Claims

1. A lubricating oil composition comprising a major amount of a lubricating oil having dissolved therein at least a viscosity index improving amount of an oil-soluble ethylene polymer viscosity index improver having dispersancy properties and containing in the range of from about 0.001 to 8 wt. % of nitrogen, which improver is an ethylene copolymer comprising about 30 to 80 wt. % ethylene and about 20 to 70 wt. % C_3 to C_{28} alpha olefin, grafted with an ethylenically unsaturated acid material selected from the group consisting of unsaturated dicarboxylic acids and anhydrides of dicarboxylic acid, wherein about 10 to 90% of the grafted dicarboxylic acid groups are reacted with a tertiary amino amine having a single primary amine group to react with the dicarboxylic acid moieties to form imido linkages, and wherein the substantial remainder of said dicarboxylic acid groups are reacted with α,ω primary diamine of 2 to 60 carbons and 2 to 12 nitrogens and having at least two primary amine groups, wherein essentially one of said primary amine groups is reacted with an acid moiety of said grafted ethylene copolymer, and the other of said primary amine groups is reacted with an anhydride of an organic acid having a C_1 to C_{30} hydrocarbyl group to thereby stabilize the resulting ethylene polymeric viscosity index improver and inhibit viscosity increase of said oil composition upon aging.

6. An oil-soluble product which is an ethylene-C_3 to C_{28} alpha-olefin copolymer having a number average molecular weight ($\overline{M}_n$) ranging from 700 to 500,000 and an average from 2 to 20 grafted succinimido moieties per molecule, from 10 to 90 percent of said succinimido moieties being nitrogen substituted with an alkylene t-amine substituent and the remainder of said succinimido moieties being nitrogen substituted with an alkylene amine terminating in a primary amine group which has been reacted with a C_1 to C_{30} hydrocarbyl acid anhydride.

4,219,433

METAL CORROSION INHIBITOR

Isao Manabe, and Akiyoshi Inubushi, both of Itano, Japan, assignors to Otsuka Chemical Co., Ltd., Osaka, Japan

Filed Sep. 19, 1978, Ser. No. 943,795

Claims priority, application Japan, Sep. 20, 1977, 52-113607

Int. Cl.[2] C23F *11/18, 11/16, 11/14, 11/12*

U.S. Cl. 252—75 6 Claims

1. A metal corrosion inhibitor comprising per 100 parts by weight of (a) benzoic acid and/or a benzoate, 30 to 160 part by weight of (b) a trialkanolamine, 3.8 to 120 parts by weight of (c) phosphoric acid and/or a phosphate, and 1 to 20 parts by weight of (d) at least one selected from mercaptobenzothiazole, its salts, benzotriazole and tolyltriazole, the amount of said benzoate, phosphate and salts of mercaptobenzothiazole being calculated as benzoic acid, phosphoric acid and mercaptobenzothiazole, respectively.

4,219,434

HYDRAULIC FLUID COMPOSITIONS BASED ON MIXED GLYCOL ETHER-GLYCOL BORIC ACID ESTERS

James M. H. Ellis, Billingham, England, assignor to Imperial Chemical Industries Limited, London, England

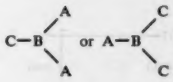
Filed Jun. 2, 1975, Ser. No. 582,882

Claims priority, application United Kingdom, Jun. 7, 1974, 25342/74

Int. Cl.[2] C10M *3/48*

U.S. Cl. 252—78.1 15 Claims

1. A hydraulic fluid which comprises an ester of orthoboric acid of general formula



where C is a radical of a glycol containing up to 30 carbon atoms or a polyglycol containing 2 to 20 ethylene and/or propylene oxide units selected from the group consisting of polyethylene glycol, polypropylene glycol and a polyglycol derived from mixed ethylene oxide and propylene oxide units, B is a boron atom and A is a glycol ether radical in which the glycol is as defined for C etherified with a C_1 to C_{20} alkyl group.

4,219,435

DETERGENT TABLET COATING

Daniel Biard, Wavre; Gérard J. Lichtfus, Brussels, both of Belgium; Hans J. Pracht, Osthofen, and Wolfgang Kleeman, Worms, both of Fed. Rep. of Germany, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 27, 1978, Ser. No. 964,220

Claims priority, application United Kingdom, Nov. 27, 1977, 49614/77

Int. Cl.[2] C11D *3/04, 11/00, 17/00*

U.S. Cl. 252—90 11 Claims

1. A detergent table having a core comprising an alkaline builder salt and provided with a coating, which comprises from 1% to 10% by weight of the tablet, of a hydrated salt having a melting point in the range of from 30° C. to 95° C., selected from the group consisting of hydrates of sodium acetate, sodium orthophosphate, di-sodium hydrogen phosphate, sodium di-hydrogen phosphate, sodium potassium tartrate, potassium aluminum sulphate, calcium bromide, calcium nitrate, and mixtures thereof, said coating having been applied to the tablet in the form of a melt.

4,219,436

HIGH DENSITY, HIGH ALKALINITY DISHWASHING DETERGENT TABLET

Jürgen W. K. Gromer, Esslingen-Zell, and Hans J. Pracht, Osthofen, both of Fed. Rep. of Germany, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 30, 1978, Ser. No. 910,915

Claims priority, application United Kingdom, Jun. 1, 1977, 23132/77

Int. Cl.[2] C11D *7/36, 17/00, 7/14, 7/16*

U.S. Cl. 252—135 12 Claims

1. A rapidly dissolving detergent tablet for use in an automatic dishwasher, having a density of at least 1.4 g./cc. and an alkalinity equivalent to at least 3 g. of sodium hydroxide per 100 g. of the tablet composition, comprising a builder salt and from about 0.1 to about 2% of a surfactant.

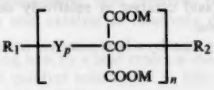
3. A surfactant-free detergent tablet having a density of at least 1.4 g./cc. and comprising (a) from 50% to 90% of a water-soluble silicate salt and (b) from 10% to 40% of a water-soluble phosphate salt.

4,219,437
COPOLYMERS OF KETO DICARBOXYLATES

Victor D. Papanu, Maryland Heights, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 892,591, Apr. 3, 1978, Pat. No. 4,169,934. This application Feb. 2, 1979, Ser. No. 8,899
Int. Cl.[2] C11D *7/26*
U.S. Cl. 252—174.21 14 Claims

1. A detergent composition comprising at least 5 percent by weight of a surfactant selected from the group consisting of anionic, nonionic, zwitterionic, ampholytic and amphoteric surfactants; and at least 1 weight percent of a copolymer having the following general formula:



wherein Y is one or more comonomers selected from the group consisting of olefins and aldehydes having from 1 to about 3 carbon atoms; n averages at least 2; p is at least 1; R_1 and R_2 are individually any chemically stable group which stabilize the polymer against rapid depolymerization in alkaline solution; and M is selected from the group consisting of alkali metal, ammonium and alkanol ammonium groups having from 1 to about 4 carbon atoms in the alkyl chain.

4,219,438
COMPOSITION FOR MARKING AND IDENTIFICATION PURPOSES

Norma A. Weston, Annandale, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Dec. 18, 1970, Ser. No. 178,528
Int. Cl.[3] C09K *11/02*
U.S. Cl. 252—301.35 6 Claims

1. A composition of matter useful for marking and identification purposes comprising (A) a xylene, benzene or toluene solvent, (B) a quinazolone fluorescent material and (C) an alkyd resin.

4,219,439
METHOD OF MAKING OIL-CONTAINING MICROCAPSULES

Makoto Miyake, Nishinomiya; Tomoharu Shiozaki, Amagasaki; Shunsuke Shioi, Daito; Tetsuo Shiraishi, Amagasaki, and Takao Matsushita, Kobe, all of Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 873,429, Jan. 27, 1978, abandoned. This application Mar. 31, 1978, Ser. No. 892,317
Claims priority, application Japan, Jan. 28, 1977, 52-9022
Int. Cl.[2] B01J *13/02*
U.S. Cl. 252—316 7 Claims

1. In a method of making oil-containing microcapsules for pressure-sensitive copying papers comprising the steps of:

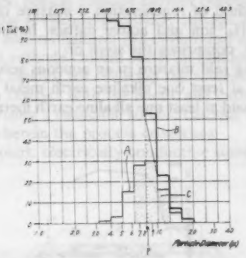
(1) preparing an aqueous system comprising an aqueous solution of at least two kinds of hydrophilic colloid materials with opposite electric charges and oil droplets dispersed in said solution,

(2) causing coacervation in said aqueous system at a temperature above the gelation point of said hydrophilic colloid materials to form a coacervate suspension in which each of said oil droplets is surrounded by a coacervate; and

(3) cooling said coacervate suspension to a temperature below the gelation point of said hydrophilic colloid materials to form multi-nucleus capsules while subjecting said oil droplets each having a coacervate therearound to an agitation flow,

the improvement whereby multi-nucleus microcapsules having an average diameter within the range of 3 to 20 microns are formed and more than 50% of the capsule particles belong to the channel of the peak and its adjoining channels in the volume integration of particles having different particle diameters measured by Coulter Counter, said improvement consisting essentially of controlling the aggregation of particles of oil droplets each having a coacervate therearound during said cooling step by an agitation flow produced by rotating at least one agitator having at least one vane in a vessel containing said coacervate suspension under the following conditions:

$$0.3 \leqq 2a/D \leqq 1$$



$$0.05 \leqq Sp/ST \leqq 1$$

$$5 \leqq n \leqq 200$$

wherein D is the maximum inner diameter of the vessel, a is the maximum radius of gyration of the agitator, ST is the maximum vertical sectional area of the coacervate suspension in the vessel, Sp is the total of the maximum vertical sectional area of the agitator vane rotating spaces and n is the number of revolutions per minute of the agitator.

4,219,440
MULTIPLE ANALYSIS HEMATOLOGY REFERENCE CONTROL REAGENT AND METHOD OF MAKING THE SAME

Alan H. Runck, Hollywood; Douglas Armstrong, Coral Springs, and James T. Hutchisson, Miami Springs, all of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Continuation-in-part of Ser. No. 915,761, Jun. 15, 1978, abandoned. This application Jun. 6, 1979, Ser. No. 44,841
Int. Cl.[2] G01N *33/16;* C09K *3/00*
U.S. Cl. 252—408 21 Claims

1. A multiple analysis hematology reference control comprising a suspension of red blood cells and platelets in a saline medium which includes urea, said urea being present in at least a concentration normally detrimental to stability and integrity of red blood cells, said urea concentration not causing deleterious effects such that red blood cell and platelet parameters are generally stable and approximate those occurring in mammalian blood specimens, wherein said control is capable of being used for testing the accuracy and precision of classical red blood cell and platelet parameters.

4,219,441
AQUEOUS ALKALI OR ALKALINE TREAT AND HEAT REGENERATION OF NH_4^+ ADSORBED ZEOLITE OR ZEOLITE-CARBON USED TO TREAT WASTE WATER

Yusaku Noshimura; Yasuo Koseki; Masayoshi Kubota, all of Hitachi; Shoji Kubota, Katsuta, and Sankichi Takahashi, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 29, 1977, Ser. No. 855,702
Claims priority, application Japan, Dec. 1, 1976, 51-143402; Jan. 5, 1977, 52-113; Jan. 14, 1977, 52-2415
Int. Cl.[2] B01J *29/38, 21/20;* B01D *15/06;* B01J *1/09*
U.S. Cl. 252—412 32 Claims

1. A method of regenerating a mixture of zeolite having

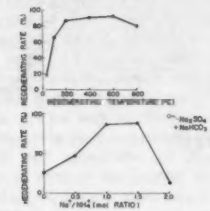
adsorbed NH_4^+ion and active carbon having adsorbed organic matter, comprising the steps of:

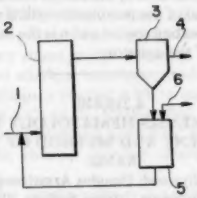
submerging said mixture in an aqueous solution containing ions of at least one alkali metal thereby adding ions of said at least said one alkali metal to the mixture to make an aqueous mixture, wherein the mol ratio of said alkali ions to said NH_4^+ions is in the range of 1 to 1.5; and

heating the aqueous mixture with the added ions to within the temperature range of 150° to 800° C. to release NH_3 gas and decompose the organic matter without decomposing the zeolite.

10. A method of regenerating a mixture of zeolite having adsorbed NH_4^+ion and active carbon having adsorbed organic matter, comprisng the steps of:

submerging said mixture in an aqueous solution containing ions of at least one alkaline earth metal thereby adding ions of said at least one alkaline earth metal to the mixture





to make an aqueous mixture, wherein the mol ratio of said alkaline earth metal ions to said NH_4^+ions is in the range of 1 to 1.5, and

heating the aqueous mixture with the added ions to within the temperature range of 150° to 800° C. to releast NH_3 gas and decompose the organic matter without decomposing the zeolite.

17. A method of regenerating zeolite having adsorbed NH_4^+ions, comprising the steps of:

submerging said zeolite in an aqueous solution containing ions of at least one alkali metal thereby adding ions of at least one alkali metal to the zeolite to make an aqueous mixture, wherein the mol ratio of said alkali ions to said NH_4^+ions is in the range of 1 to 1.5; and

heating the aqueous mixture with the added ions to within the temperature range of 150° to 800° C. to release NH_3 gas without decomposing the zeolite.

4,219,442

FLUID COKE CONTAMINATED CATALYST REGENERATION PROCESS

Anthony G. Vickers, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Dec. 14, 1978, Ser. No. 969,607

Int. Cl.[2] **B01J** *21/20, 29/38;* **C10G** *11/18*

U.S. Cl. 252—417 **6 Claims**

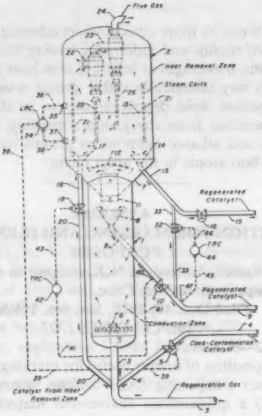
1. A process for regenerating a coke-contamined fluid catalysts to obtain a regenerated catalyst of a predetermined temperature range for return of said regenerated catalyst to a hydrocarbon conversion zone which process comprises:

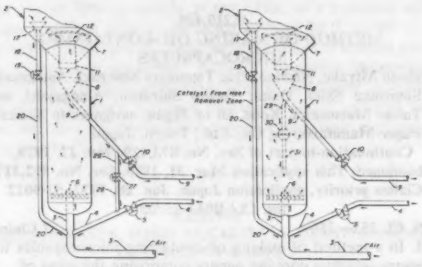
(a) introducing oxygen-containing regeneration gas and coke-contaminated fluid catalyst into a lower locus of a relatively dilute-phase combustion zone maintained at a temperature sufficient for coke-oxidation and therein oxidizing coke to produce hot regenerated catalyst and hot flue gas;

(b) collecting and withdrawing from an upper locus of said relatively dilute-phase combustion zone a portion of said hot regenerated catalyst;

(c) transporting said hot flue gas and the remaining portion of said hot regenerated catalyst into a lower locus of a relatively dense-phase heat removal zone and therein maintaining said catalyst at relatively dense-phase fluid bed conditions;

(d) withdrawing heat by a heat-removal means from said hot





regenerated catalyst in said relatively dense-phase heat removal zone; and

(e) recovering regenerated catalyst possessing the predetermined temperature range for its return to said hydrocarbon conversion zone by (1) either withdrawing the required regenerated catalyst exclusively from said upper locus of said relatively dilute-phase combustion zone when the desired temperature of said regenerated catalyst is the upper limit of said predetermined range; or (2) withdrawing a portion of the required regenerated catalyst from said relatively dense-phase heat removal zone, withdrawing a portion from said upper locus of said relatively dilute-phase combustion zone and thereafter admixing said withdrawn portions in selected proportions to achieve an admixture of regenerated catalyst possessing the desired temperature range for return of same to said hydrocarbon conversion zone.

2. A process for regenerating a coke-contaminated fluid catalyst to obtain a regenerated catalyst of a predetermined temperature range for return of said regenerated catalyst to a hydrocarbon conversion zone which process comprises:

(a) introducing oxygen-containing gas and coke-contaminated fluid catalyst into a lower locus of a relatively dilute-phase combustion zone maintained at a temperature sufficient for coke-oxidation and therein oxidizing coke to produce said hot regenerated catalyst and hot flue gas;

(b) collecting and withdrawing from an upper locus of said relatively dilute-phase combustion zone a portion of said hot regenerated catalyst;

(c) transporting said hot flue gas and the remaining portion of said hot regenerated catalyst into a lower locus of a relatively dense-phase heat removal zone and therein maintaining said catalyst at relatively dense-phase fluid conditions;

(d) withdrawing heat by a heat removal means from said hot regenerated catalyst maintained in said relatively dense phase heat removal zone;

(e) controlling the temperature of said upper locus of said relatively dilute-phase combustion zone by withdrawing at least a portion of said regenerated catalyst from said relatively dense-phase heat removal zone and introducing said withdrawn portion into said relatively dilute-phase combustion zone; and

(f) obtaining said regenerated catalyst of predetermined temperature range, the lower limit of which is the temperature of said catalyst maintained in said relatively dense-phase heat removal zone after said desired portion of heat has been withdrawn in subparagraph (d) by either: (1) withdrawing said required regenerated catalyst for return to said hydrocarbon conversion zone exclusively from said upper locus of said relatively dilute-phase combustion zone when the desired temperature range of said regenerated catalyst is the upper limit of said predetermined temperature range; or (2) withdrawing a portion of said required regenerated catalyst from said relatively dense-phase heat removal zone, withdrawing a portion of said required regenerated catalyst from said upper locus of said relatively dilute-phase combustion zone and admixing said portions in proportions to achieve a regenerated catalyst within the upper and lower limits of said predetermined temperature range for return of same to said hydrocarbon conversion zone.

4,219,443

METHOD OF PREPARING A CATHODE CURRENT COLLECTOR FOR USE IN AN ELECTROCHEMICAL CELL

Keith A. Klinedinst, Marlborough, Mass., and Francis G. Murphy, Tiverton, R.I., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Dec. 20, 1978, Ser. No. 971,571
Int. Cl.[2] H01M *4/08, 6/14*
U.S. Cl. 252—425.3 **8 Claims**

1. A process for preparing a cathode current collector for use in a primary electrochemical cell comprising an oxidizable anode material; a cathode current collector comprising a layer comprising finely-divided catalyst for reducing the soluble cathode; and an electrolyte solution, in contact with the anode and cathode current collector, comprising a reducible soluble cathode and an electrolyte solute; wherein the process comprises:

positioning a porous, inert, electrically-conductive substrate between a first zone at a first pressure and a second zone at a second, higher pressure;

preparing a bonding layer dispersion comprising a liquid vehicle, a finely-divided thermoplastic polymer and a minor amount, based on the weight of the polymer, of an inert, electrically-conductive material;

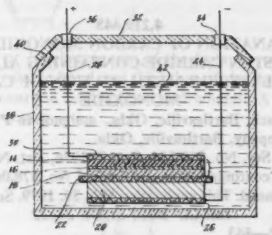
preparing a catalyst layer dispersion comprising a liquid vehicle, a finely-divided catalyst and a minor amount, based on the weight of the catalyst, of a thermoplastic-polymer;

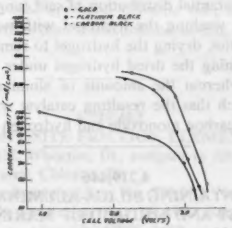
forming a bonding layer on the substrate by applying the bonding layer dispersion to the surface of the substrate in the second zone and forming a catalyst layer on the porous substrate by applying the catalyst layer dispersion to the bonding layer dispersion, the solid particles of the dispersions being forced against the substrate and the liquid being forced through the substrate; and

heating the substrate, the bonding layer, and the catalyst layer at a temperature and for a time effective to fuse them into a unitary, porous cathode current collector.

5. A process for preparing a cathode current collector for use in a primary electrochemical cell comprising an oxidizable anode material; a cathode current collector comprising a layer of finely-divided catalyst for reducing the solvent; an electrolytic solution, in contact with the anode and cathode current collector, comprising a reducible soluble cathode and an electrolyte solute; wherein the process comprises:

providing an inert, electrically-conductive substrate;





preparing a bonding layer dispersion comprising a liquid vehicle, a finely-divided thermoplastic polymer and a minor amount, based on the weight of the polymer, of an inert, electrically-conductive material;

forming a bonding layer on the substrate in a plurality of cycles by alternately applying a thin layer of the bonding layer dispersion to the surface of the substrate and drying to remove the liquid until a thickness of at least 5 micrometers is built up;

preparing a catalyst layer dispersion comprising a liquid vehicle, a finely-divided catalyst and a minor amount, based on the weight of the catalyst, of a thermoplastic polymer;

forming a catalyst layer on the bonding layer in a plurality of cycles by alternately applying a thin layer of the catalyst layer dispersion to the bonding layer and drying to remove the liquid until a thickness of at least 25 micrometers is built up; and

heating the substrate, the bonding layer, and the catalyst layer at a temperature and for a time effective to fuse them into a unitary, porous cathode current collector.

4,219,444
ETHYLENE POLYMERIZATION CATALYSTS

Robert W. Hill, Houston, Tex.; William L. Kehl, Pittsburgh, Pa., and Thomas J. Lynch, Houston, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 722,197, Sep. 10, 1976, abandoned, which is a continuation-in-part of Ser. No. 612,252, Sep. 10, 1975, abandoned. This application Dec. 27, 1977, Ser. No. 864,296

Int. Cl.[2] B01J *27/14, 31/12*

U.S. Cl. 252—435 14 Claims

1. A process for preparing an olefin polymerization catalyst which consists essentially of depositing a chromium compound upon an amorphous inorganic carrier containing aluminum and phosphorus moieties; said carrier having been prepared by neutralizing an acidic aqueous solution containing Al^{+++} cations and PO_4^{---} anions in an aqueous medium at a pH in the range of about 4.0–11.0 to form a solid precipitate containing aluminum and phosphorus moieties, and recovering said pecipitate; said acidic solution containing aluminum and phosphorus in an atomic ratio in the range of about 5:1 to 1:1.

4,219,445
METHANATION OF CARBON MONOXIDE OVER TUNGSTEN CARBIDE-CONTAINING ALUMINA CATALYST FOR METHANATION OF CARBON MONOXIDE

Jack N. Finch, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 720,524, Sep. 7, 1976, Pat. No. 4,155,928, which is a continuation-in-part of Ser. No. 578,062, May 16, 1975, abandoned. This application Feb. 26, 1979, Ser. No. 15,396

Int. Cl.[2] B01J *21/04, 27/22*

U.S. Cl. 252—443 14 Claims

1. A tungsten carbide-containing alumina catalyst produced by mixing powdered tungsten carbide in an alumina hydrogel to obtain a substantial distribution of said tungsten carbide in said hydrogel, washing the hydrogel with water to remove soluble impurities, drying the hydrogel to remove free water, and then calcining the dried hydrogel under a nonoxidizing atmosphere, wherein the amounts of alumina and tungsten carbide are such that the resulting catalyst will catalyze the conversion of carbon monoxide and hydrogen to methane.

4,219,446
ZEOLITE-CONTAINING SILICA-ALUMINA HYDROGEL CATALYST AND METHOD OF MAKING SAME

Guenter H. Kuehl, and Howard S. Sherry, both of Cherry Hill, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 732,553, Oct. 15, 1976. This application Apr. 26, 1978, Ser. No. 899,913

Int. Cl.[2] B01J *37/02, 29/06, 29/04*

U.S. Cl. 252—453 12 Claims

1. A cracking catalyst made by a method comprising the steps of:

(1) nozzle-mixing of an acid alum stream with a second stream comprising sodium silicate, alkali metal hydroxide and suspended fines;

(2) forming droplets of the resulting sol and causing them to gel;

(3) exchanging the gel by contacting same, in order, with (a) an ammonium salt solution, (b) an aluminum salt solution and (c) a rare earth salt solution;

(4) washing with water;

(5) homogenizing;

(6) spray drying;

(7) impregnating with rare earth ions; and

(8) drying.

2. The catalyst of claim 1 wherein said fines are selected from the group consisting of crystalline aluminosilicate zeolites, alumina and clays.

4,219,447
CATALYST AND A PROCESS FOR ITS PREPARATION

Kenneth S. Wheelock, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 19, 1978, Ser. No. 970,936

Int. Cl.[2] B01J *21/04, 23/40, 23/42*

U.S. Cl. 252—466 PT 14 Claims

1. A catalyst useful for the conversion of a hydrocarbon feed by contact thereof at hydrocarbon conversion conditions which comprises a cluster of titanium metal oxide and a Group VIII noble metal deposited on the surface of an inorganic oxide support.

4,219,448
SCREENABLE CONTACT STRUCTURE AND METHOD FOR SEMICONDUCTOR DEVICES

Bernd Ross, 2154 Blackmore Ct., San Diego, Calif. 92109

Filed Jun. 8, 1978, Ser. No. 913,872

Int. Cl.[2] H01B *1/00, 5/13*

U.S. Cl. 252—500 12 Claims

1. A metal powder composition for deposition and firing upon a substrate, comprising

a screenable metal powder,

a binder,

a vehicle, and

a metal frit for use as a liquid medium to transport the metal powder in a liquid sintering process and thereby create a coherent metal structure.

3. A metal powder composition for deposition and firing upon a substrate, comprising

a screenable powder of a metal having an electrical resistivity of 7.0 ohm-cm or less at 0° C.,

a binder,

a vehicle, and

a metal frit having a melting point approximately in the range of 200° C. to 600° C.

10. A composition according to claim 1, 2 or 3, further comprising a fluxing agent selected from the group consisting of fluorides.

4,219,449
CARANE NITRILES

Willem Lenselink, Voorthuizen, and Dirk K. Kettenes, Putten, both of Netherlands, assignors to Polak's Frutal Works B.V., Amersfoort, Netherlands

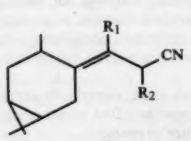
Filed Feb. 17, 1978, Ser. No. 879,019

Claims priority, application United Kingdom, Mar. 23, 1977, 12223/77

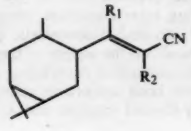
Int. Cl.[3] A61K *7/46;* C07C *121/47, 121/48*

U.S. Cl. 252—522 R 38 Claims

14. A mixture of two or more chemical compounds having basic structural formulae selected from the class consisting of

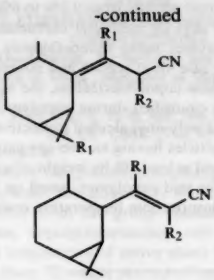


(1)



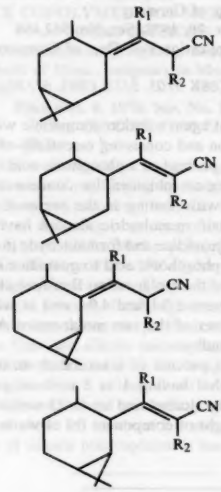
(2)

-continued



where R_1 and R_2 represent hydrogen or alkyl radicals having 1 to 6 carbon atoms and the total carbon number of R_1 and R_2 is 6 or less.

25. A perfume composition comprising, in admixture with other olfactorily active ingredients a mixture of 2 or more chemical compounds having basic structural formulae selected from the class consisting of



where R_1 and R_2 represent hydrogen or alkyl radicals having 1 to 6 carbon atoms and the total carbon number of R_1 and R_2 is 6 or less.

4,219,450

PROPENE TRIMER AND TETRAMER OXIMES IN PERFUMES

Robert S. DeSimone, Middletown, N.Y., assignor to Hercules Incorporated, Wilmington, Del.

Filed Sep. 8, 1978, Ser. No. 941,101

Int. Cl.[2] A61K 7/46; C11B 9/00

U.S. Cl. 252—522 R **4 Claims**

1. A perfume composition comprising an olfactorily effective amount of a propene trimer oxime or a propene tetramer oxime and at least one other olfactorily active ingredient.

4,219,451

2,2,3-TRIMETHYL-3-CYCLOPENTEN-1-YLALKENYL AND ALKYLIDENE SECONDARY ALCOHOLS IN PERFUME COMPOSITIONS

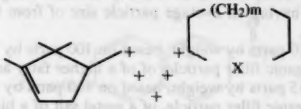
Takao Yoshida, West Long Branch; Braja D. Mookherjee, Holmdel; Venkatesh Kamath, Red Bank; John B. Hall, Rumson; William I. Taylor, Summit, and Frederick L. Schmitt, Holmdel, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 932,677, Aug. 10, 1978, Pat. No. 4,173,585. This application Aug. 3, 1979, Ser. No. 63,565

Int. Cl.[2] C11B 9/00

U.S. Cl. 252—522 R **3 Claims**

1. A perfume composition comprising, in an aroma augmenting or enhancing quantity, at least one compound having the structure:



where m is 0 or 1; wherein one of the lines + + + + is a carbon-carbon single bond and the other of the lines + + + + is a carbon-carbon double bond and wherein X is carbinol having the structure:

and at least one adjuvant selected from the group consisting of natural perfume oils, synthetic perfume oils, alcohols, aldehydes, ketones other than those defined herein, esters, nitriles and lactones.

4,219,452

COMPOSITE FRICTION ELEMENT

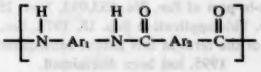
John B. Littlefield, Wheaton, Ill., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Continuation-in-part of Ser. No. 738,052, Nov. 2, 1976, abandoned. This application May 19, 1978, Ser. No. 907,830

Int. Cl.[2] C08K 7/02

U.S. Cl. 260—3 **16 Claims**

1. A brake shoe characterized by a body of a composite friction material having a matrix comprised of a vulcanized rubber binder material having distributed therethrough a plurality of filler particles including hard mineral fillers, friction modifiers and a reinforcing fiber, at least one of the filler particles having an absorptive capacity sufficient to absorb any binder decomposed during braking, the absorptive filler having an oil absorption value of at least 30 and being present in the body at a concentration of about 30 to about 50 percent by weight and the reinforcing fiber being a polymer characterized by recurring units of the formula



wherein Ar_1 is selected from the group consisting of p-phenylene, a chloro-substituted p-phenylene, and 4,4'-substituted diphenyl methane and Ar_2 is p-phenylene and the fiber being present in said body at a concentration of about 0.5 to about 10.0 percent by weight.

4,219,453

INORGANIC FILLER-INCORPORATED ETHYLENE POLYMER FILM

Hisaya Sakurai; Kisoo Moriguchi, and Yoshihiko Katayama, all of Kurashiki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sep. 15, 1978, Ser. No. 942,713
Claims priority, application Japan, Sep. 22, 1977, 52-113244
Int. Cl.[2] C08K *3/24, 3/26, 3/30*
U.S. Cl. 260—23 H 5 Claims

1. An inorganic filler-incorporated ethylene polymer film made of an ethylene polymer composition comprised of:

(a) 35 to 90% by weight, based on the weight of the ethylene polymer composition, of an ethylene polymer having a melt index of from 0.005 to 0.2, and a specific gravity of from 0.94 to 0.98 as measured at a temperature of 23° C.,

(b) 10 to 65% by weight, based on the weight of the ethylene polymer composition, of a finely divided inorganic filler particle having an average particle size of from 0.01 to 10 microns,

(c) 0.1 to 10 parts by weight, based on 100 parts by weight of the inorganic filler particle, of of a higher fatty acid,

(d) 0.5 to 15 parts by weight, based on 100 parts by weight of the inorganic filler particle, of a metal salt of a higher fatty acid, and

(e) 0.05 to 5 parts by weight, based on 100 parts by weight of the inorganic filler particle, of a stabilizer composition predominantly comprised of a phenolic stabilizer;

said inorganic filler-incorporated ethylene polymer film being produced by kneading at an elevated temperature and then extruding said ethylene polymer composition at a temperature of from 150° to 250° C. through a ring die having lips with a gap of from 0.7 to 3.0 mm, at a blow ratio of from 2/1 to 8/1 and at a frost line height of from 200 to 2,000 mm.

4,219,454

VINYL ACETATE COPOLYMER EMULSIONS FOR PAINT

John G. Iacoviello, Somerville, N.J., and Wiley E. Daniels, Easton, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Sep. 5, 1978, Ser. No. 939,557
Int. Cl. C08f *218/08*
U.S. Cl. 260—29.6 T 13 Claims

1. In a paint composition comprising water, pigment, and a latex comprising from about 40 to 70% of film forming polymerized resin particles containing at least 25% of vinyl acetate by weight, and from about 5–20% of a monomer selected from the group consisting of ethylene and a lower alkyl acrylate, the improvement which comprises said polymerized resin particles being substantially spherical in shape and not more than about 5% of the total number of particles in the latex have a size greater than about 0.65 microns and not more than about 5% of the total number of particles have a particle size less than 0.33 microns, and the differential between 25% of the largest particles and 25% of the smallest particles is not more than 0.15 microns.

4,219,455

VINYL ESTER COPOLYMER AQUEOUS EMULSION WOOD ADHESIVE

Martin K. Lindemann, Greenville, S.C., assignor to Chas. S. Tanner Co., Greenville, S.C.

Continuation-in-part of Ser. No. 853,993, Nov. 25, 1977, Pat. No. 4,115,306. This application Sep. 18, 1978, Ser. No. 943,142
The portion of the term of this patent subsequent to Sep. 19, 1995, has been disclaimed.
Int. Cl.[2] C08L *31/02*
U.S. Cl. 260—29.6 WA 9 Claims

1. Vinyl ester copolymer aqueous emulsion wood adhesive comprising water having emulsified therein an aqueous emulsion copolymer of monoethylenic monomers having a T_g of at least 10° C. and consisting essentially of at least 80% by weight of the copolymer of vinyl acetate, from 0.2% to 6% by weight of the copolymer of allyl or methallyl carbamate, and any balance of said copolymer being monoethylenic monomers copolymerizable with said vinyl acetate and nonreactive with hydroxy during emulsion copolymerization, the monomers of said copolymer being emulsified during copolymerization by from 0.5% to 10% of a polyvinyl alcohol protective colloid to provide copolymer particles having an average particle size in excess of 0.3 micron, and at least 3% by weight of water insoluble liquid plasticizer for said copolymer, based on the weight of the copolymer, to insure room temperature coalescence.

4,219,456

FLAME RETARDANT AGENT SOLUTION OF PHOSPHORIC ACID CONTAINING CONDENSATE OF GUANIDINE AND FORMALDEHYDE COMPATIBLE WITH FORMALDEHYDE RESIN SOLUTIONS

Manfred Langer, Karlstein, Fed. Rep. of Germany, assignor to Deutsche Gold- und Silber Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Nov. 20, 1978, Ser. No. 962,486
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1977, 2756973
Int. Cl.[2] C08K *5/05, 5/13;* C08L *61/20*
U.S. Cl. 260—33.4 R 9 Claims

1. A flame retardant agent solution compatible with a formaldehyde resin solution and consisting essentially of:

(a) 30 to 75 weight percent of a phosphoric acid containing condensation product obtained by condensation under basic conditions with heating in the presence of a saturated straight chain monohydric alcohol having 1 to 3 carbon atoms of guanidine and formaldehyde in which the molar ratio A of phosphoric acid to guanidine is between 0.7:1 and 1.5:1 and the molar ration B of formaldehyde to guanidine is between 1.0:1 and 4.0:1 and in which additionally the product of the two molar ratios A and B is from 1.0 to 6.0, and

(b) 70 to 25 weight percent of a saturated, straight chain monohydric alcohol having 1 to 3 carbons atoms or a mixture of such an alcohol and up to 25 weight percent, based on the weight of component (b) of water.

4,219,457

RESINOUS COMPOSITION FOR SURFACE-TREATING REINFORCING FIBERS AND SURFACE-TREATING PROCESS

Itsuki Taniguchi; Ryuichi Itoh, both of Kyoto; Toshihiro Iwatsuki, Nagaokakyo, and Shigehiro Ohuchi, Iyo, all of Japan, assignors to Toray Industries, Inc., Japan

Division of Ser. No. 843,336, Oct. 18, 1977, Pat. No. 4,167,538. This application Apr. 4, 1979, Ser. No. 26,896
Claims priority, application Japan, Oct. 19, 1976, 51-124487
Int. Cl.[2] C08K *9/04*
U.S. Cl. 260—38 8 Claims

1. A process for treating fibers which comprises applying to carbon fibers an aqueous dispersion of the following components (A), (B) and (C):

(A) an epoxy resin;

(B) a condensation product of an acid component comprising an unsaturated dibasic acid and a hydroxyl component comprising an oxyalkylated bisphenol, and;

(C) an oxyalkylene derivative of a phenol.

4,219,458

BLOCK COPOLYMER HOT MELT ADHESIVE COMPOSITIONS

Donald D. Donermeyer, Springfield, and Joseph G. Martins, Ludlow, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 2, 1978, Ser. No. 948,123
Int. Cl.[2] C08K *3/08, 7/14*
U.S. Cl. 260—40 R 22 Claims

1. An adhesive composition comprising a block copolymer, aluminum powder, and glass fiber; wherein the block copolymer is selected from the group consisting of copolyesters, copolyamides, copoly(esteramides) and copoly(ether-esters) melting at a temperature of above about 150° C., having from about 30 to about 70 weight percent of hard segments and from about 70 to about 30 weight percent of soft segments; wherein the weight ratio of block copolymer to aluminum powder and glass fiber is in the range of about 3:7 to about 3:2, wherein the weight ratio of block copolymer to glass fiber is at least about 2:1 and wherein the weight ratio of glass fiber to aluminum powder is at least about 1:9.

4,219,459

BLOCK COPOLYMER HOT MELT ADHESIVE COMPOSITIONS

Donald D. Donermeyer, Springfield, and Joseph G. Martins, Ludlow, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 4, 1978, Ser. No. 948,449
Int. Cl.[2] C08K *7/14, 7/18*
U.S. Cl. 260—40 R 29 Claims

1. An adhesive composition comprising a block copolymer, a particulate mineral reinforcing agent, glass fiber and hollow inorganic silicate microspheres; wherein the block copolymer is selected from the group consisting of copolyesters, copolyamides, copoly(esteramides) and copoly(etheresters) melting at a temperature of above about 150° C., having from about 30 to about 70 weight percent of hard segments and from about 70 to about 30 weight percent of soft segments; wherein the weight ratio of block copolymer to particulate mineral reinforcing agent, glass fiber and silicate microspheres is in the range of about 3:7 to about 3:2, wherein the weight ratio of block copolymer to glass fiber is at least about 3:4; wherein the weight ratio of particulate mineral reinforcing agent to glass fiber is in the range of about 1:3 to about 9:1 and wherein the volume percentage of silicate microspheres is less than about 12.

4,219,460

BLOCK COPOLYMER HOT MELT ADHESIVE COMPOSITION

Donald D. Donermeyer, Springfield, and Joseph G. Martins, Ludlow, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 4, 1978, Ser. No. 948,451
Int. Cl.[2] C08K *7/14*
U.S. Cl. 260—40 R 22 Claims

1. An adhesive composition comprising a block copolymer, a particulate mineral reinforcing agent and glass fiber; wherein the block copolymer is selected from the group consisting of copolyesters, copolyamides, copoly(esteramides) and copoly(ether-esters) melting at a temperature of above about 150° C., having from about 30 to about 70 weight percent of hard segments and from about 70 to about 30 weight percent of soft segments; wherein the weight ratio of block copolymer to particulate mineral reinforcing agent and glass fiber is in the range of about 3:7 to about 3:2, wherein the weight ratio of block copolymer to glass fiber is at least about 3:4 and wherein the weight ratio of particulate mineral reinforcing agent to glass fiber is in the range of about 1:3 to about 9:1.

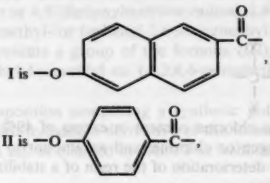
4,219,461

POLYESTER OF 6-HYDROXY-2-NAPHTHOIC ACID, PARA-HYDROXY BENZOIC ACID, AROMATIC DIOL, AND AROMATIC DIACID CAPABLE OF READILY UNDERGOING MELT PROCESSING

Gordon W. Calundann, Somerset, N.J., assignor to Celanese Corporation, New York, N.Y.

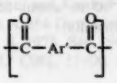
Continuation-in-part of Ser. No. 843,993, Oct. 20, 1977, Pat. No. 4,161,470. This application Apr. 23, 1979, Ser. No. 32,086
Int. Cl.[2] C08G *63/06, 63/18*
U.S. Cl. 260—40 P 42 Claims

1. A melt processable wholly aromatic polyester capable of forming an anisotropic melt phase at a temperature below approximately 320° C. consisting essentially of the recurring moieties I, II, III, and IV which may include substitution of at least some of the hydrogen atoms present upon an aromatic ring wherein:



III is a symmetrical dioxy aryl moiety of the formula —{O—Ar—O}— where Ar is a divalent radical comprising at least one aromatic ring, and

IV is symmetrical a dicarboxy aryl moiety of the formula



where Ar' is a divalent radical comprising at least one aromatic ring,

with said optional substitution if present being selected from the group consisting of an alkyl group of 1 to 4 carbon atoms, an alkoxy group of 1 to 4 carbon atoms, halogen, and mixtures of the foregoing, and wherein said polyester comprises approximately 20 to 40 mole percent of moiety I, approximately 10 up to 50 mole percent of moiety II, in excess of 5 up to approximately 30 mole percent of moiety III, and in excess of 5 up to approximately 30 mole percent of moiety IV.

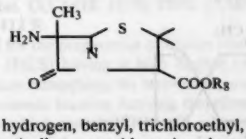
4,219,462

6-METHYL PENICILLINS

Burton G. Christensen, Scotch Plains, and Lovji D. Cama, Edison, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 194,018, Oct. 29, 1971, abandoned, which is a continuation-in-part of Ser. No. 149,349, Jun. 2, 1971, abandoned. This application Jul. 29, 1974, Ser. No. 492,812
Int. Cl.[2] C07D *499/42*
U.S. Cl. 260—245.2 R 1 Claim

1. A compound of the formula:



wherein: R_8 is hydrogen, benzyl, trichloroethyl, trimethylsilyl or a pharmaceutically acceptable cation thereof when R_8 is hydrogen.

4,219,463

STABILIZERS FOR SYNTHETIC POLYMERS COMPRISING 2,2,6,6-TETRAMETHYL-4-PIPERIDYL CARBOXYLIC ACID ESTER, β-THIOALKYL PROPIONIC ACID ESTER AND PHENOL

Motonobu Minagawa, Kosigaya; Naohiro Kubota, Urawa; Tohru Haruna, Okegawa, and Toshihiro Shibata, Urawa, all of Japan, assignors to Argus Chemical Corporation, Brooklyn, N.Y.

Filed Nov. 17, 1977, Ser. No. 852,254
Claims priority, application Japan, Dec. 10, 1976, 51-14909
Int. Cl.² C08K *5/34, 5/35, 5/36*
U.S. Cl. 260—45.8 N **36 Claims**

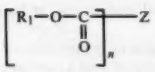
25. A polyvinyl chloride resin composition having improved resistance to deterioration when heated at 350° F., comprising a polyinyl chloride resin formed at least in part of the recurring group

and having a chlorine content in excess of 49% where X is either hydrogen or chlorine; and an amount to enhance the resistance to deterioration of the resin of a stabilizer composition comprising:

(a) aβ-thioalkyl propionic acid ester of a polyhydric alcohol in an amount of from about 10 to about 35 parts by weight;

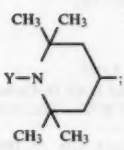
(b) a phenolic antioxidant in an amount of from about 10 to about 35 parts by weight; and

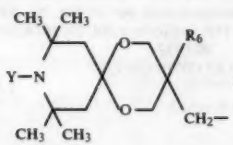
(c) a 2,2,6,6-tetramethyl-4-piperidyl carboxylic acid ester in an amount from about 90 to about 35 parts by weight and having the general formula:

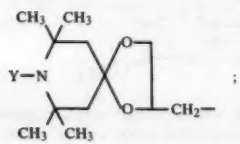


wherein:

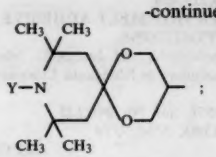
R_1 is selected from the group consisting of







-continued

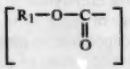


Y is selected from the group consisting of hydrogen and O·;

R_6 is lower alkyl having from one to two carbon atoms;

n is selected from the group consisting of 1, 2, 3 and 4; and

Z is an organic radical having a valence from 1 to 4, the valence positions being taken by



groups, and from one to about twenty carbon atoms, and selected from the group consisting of alkyl, alkenyl, alkylene, alkenylene, alkylidene; aryl, arylene, aralkyl, aralkylene, aralkylidene, alkaryl, alkarylene, alkarylidene; cycloalkyl, cycloalkenyl, cycloalkylene, cycloalkenylene, cycloalkylidene, alkcycloalkyl, alkcycloalkenyl, alkcycloalkenylene, alkcycloalkylene, cycloalkalkyl, cycloalkalkylene, cycloalk alkenyl, cycloalkalkenylene, aminoalkylene, nitriloalkylene, hydroxyalkylene and alkylhydroxyphenalkylene.

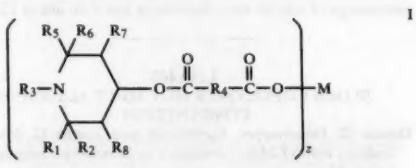
4,219,464

HINDERED PIPERIDINE CARBOXYLIC ACIDS, METAL SALTS THEREOF AND STABILIZED COMPOSITIONS

Chester E. Ramey, Spring Valley, and John J. Luzzi, Carmel, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 671,910, Mar. 29, 1976, Pat. No. 4,101,509.
This application May 30, 1978, Ser. No. 910,554
The portion of the term of this patent subsequent to Nov. 18, 1992, has been disclaimed.
Int. Cl.² C08K *5/34;* **C07D** *211/46*
U.S. Cl. 260—45.8 N **14 Claims**

1. A compound of the formula:



wherein

R_1 and R_2 independently of each other are straight- or branched-chain alkyl having from 1 to 6 carbon atoms, or together with the carbon to which they are bound form a cyclopentyl or cyclohexyl ring, which is unsubstituted or substituted with a methyl group,

R_3 is hydrogen, alkyl having 1 to 12 carbon atoms, β-methoxyethyl, alkenyl having 3 to 4 carbon atoms, propargyl, benzyl, or alkyl substituted benzyl, or acyl,

R_4 is straight-chain alkenylene of 2 to 4 carbon atoms, or a straight-chain alkylene of 1 to 4 carbon atoms substituted by alkyl or alkenyl of 1 to 18 carbon atoms, provided that the straight-chain alkylene substituted by alkyl has in total more than 8 carbon atoms,

M is hydrogen or a metal selected from the group consisting of barium, calcium, magnesium, sodium, and potassium,

z has a value of from 1 to 4, the value of z being the same as the available valence of M, and either

(a) R_5 is alkyl of 2 to 6 carbon atoms, R_6 is alkyl of 1 to 6 carbon atoms, and R_7 and R_8 are independently hydrogen or alkyl of 1 to 5 carbon atoms, provided that R_7 and R_8 are not both hydrogen, or

(b) R_5 and R_6 together with the carbon to which they are bound form a cyclopentyl or cyclohexyl ring, which is unsubstituted or substituted with a methyl group and R_7 and R_8 are independently hydrogen or alkyl of 1 to 5 carbon atoms.

4,219,465

PIPERIDINE-SPIRO-HYDANTOIN DERIVATIVES AND THEIR USE AS POLYMER STABILIZERS

Nobuo Soma; Syoji Morimura; Takao Yoshioka, and Tomoyuki Kurumada, all of Hiromachi, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

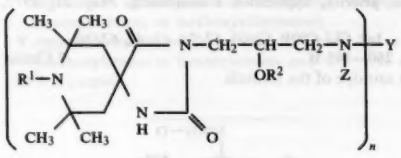
Filed Jun. 5, 1979, Ser. No. 45,844

Claims priority, application Japan, Jun. 24, 1978, 53-76694

Int. Cl.[2] C07D *471/10;* **C08K** *5/34*

U.S. Cl. 260—45.8 NT **11 Claims**

1. A piperidine-spiro-hydantoin derivative having the formula



(I)

and an acid addition salt thereof wherein

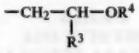
R^1 represents hydrogen or methyl,

R^2 represents hydrogen or an acyl group having not more than 18 C-atoms,

n is 1 or 2,

when n is 1,

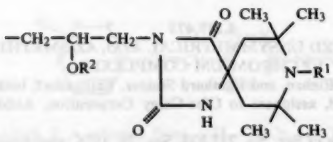
Y and Z may be the same or different and represent hydrogen, and alkyl group having from 1–18 C-atoms, an alkenyl group having from 3–18 C-atoms, a cycloalkyl group having from 5–7 C-atoms, a phenyl group optionally substituted with methyl, an aralkyl group having 7 or 8 carbon atoms, a group of the formula



(II)

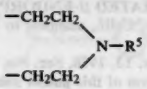
(wherein R^3 represents hydrogen or methyl and R^4 represents hydrogen or an acyl group having not more than 18 carbon atoms;)

2,2,6,6-tetramethyl-4-piperidyl or 1,2,2,6,6-pentamethyl-4-piperidyl or a group of the formula



(III),

or Y and Z may be joined together to form a tetramethylene, pentamethylene, 3-oxapentamethylene, succinyl, glutaryl, maleoyl or phthaloyl group or a group of the formula



wherein R^5 is a group of the formula (III), with the proviso that R^2 and R^4 are hydrogen when Y and/or Z are hydrogen and that R^2 and R^4 are each hydrogen or an acyl group as defined or R^2 is hydrogen and R^4 is an acyl group as defined when Y and Z are both a group of the formula (II) or one of Y and Z is a group of the formula (II) and the other is different from hydrogen;

when n is 2,

Y represents an alkylene group having from 2–6 carbon atoms, a phenylene group which may be substituted by methyl, p-xylylene, 1,4-cyclohexylene, the 4,4'-diphenylether or 4,4'-diphenylmethane radical, 2,4-s-triazinediyl, 6-methyl- or 6-phenyl-2,4-s-triazinediyl, and

Z represents a group of the formula (III), 2,2,6,6-tetramethyl-4-piperidyl or 1,2,2,6,6-pentamethyl-4-piperidyl.

10. A composition comprising a synthetic polymer and a piperidine-spiro-hydantoin derivative of the formula (I) or an acid addition salt as claimed in claim 1 as stabilizer.

4,219,466

IMPACT RESISTANT RESIN CONTAINING COMPOSITIONS HAVING REDUCED FLAMMABILITY

Kazuo Yoshida, Yokohama, and Kunio Fukuda, Chigasaki, both of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Filed Nov. 9, 1978, Ser. No. 959,271

Int. Cl.[2] C08L *51/00, 53/00*

U.S. Cl. 260—45.75 B **8 Claims**

1. A resin composition having a high impact resistance, improved release property and a reduced tendency to ignite and to propagate flame in the absence of an external heat source obtained by mixing a polymer obtained from a major amount of a monovinyl aromatic monomer, a block copolymer consisting essentially of styrene and butadiene, an amorphous alpha-olefin polymer or copolymer, a flame retarding quantity of a halide flame-retardant and an antimony compound said composition comprising 100 parts by weight of said polymer obtained from a major amount of a monovinyl aromatic monomer, 1 to 10 parts by weight of said copolymer consisting essentially of styrene and butadiene, and 0.2 to 10 parts by weight of said amorphous alpha-olefin polymer or copolymer.

4,219,467

METHOD FOR THE PREPARATION OF CHORIONIC HUMAN SOMATOMAMMOTROPIN

Berislav Pende, and Paolo Neri, both of Siena, Italy, assignors to Istituto Sieroterapico & Vaccinogeno Toscano 'SCLAVO' S.p.A., Siena, Italy

Filed Dec. 1, 1978, Ser. No. 965,688

Claims priority, application Italy, Dec. 27, 1977, 31276 A/77

Int. Cl.[2] A61K *35/50;* **C07G** *15/00*

U.S. Cl. 260—112 R **4 Claims**

1. A method for the preparation of human chorionic somatomammotropin (HCS) having a high degree of purity, from placental extracts comprising the steps of separating, from the extract of a proteinic fraction deriving therefrom, by centrifugation a phase which contains HCS and subjecting said phase to treatments of enrichment by ion exchange, ultrafiltration and chromatography.

4,219,468

TRITIATED β-ENDORPHIN

Choh H. Li, Berkeley, Calif., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Nov. 13, 1978, Ser. No. 960,253
The portion of the term of this patent subsequent to Jun. 20, 1992, has been disclaimed.
Int. Cl.² C07C *103/52*
U.S. Cl. 260—112.5 R 4 Claims

1. Tritiated β-endorphin.

4,219,469

EXTRACTION OF COTTONSEED AND CONCENTRATES TO IMPROVE THE COLOR OF PROTEIN ISOLATE

Ranjit S. Kadan, New Orleans; George M. Ziegler, Jr., Harahan, and James J. Spadaro, New Orleans, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Sep. 19, 1978, Ser. No. 943,893
Int. Cl.² A23T *1/14*
U.S. Cl. 260—123.5 13 Claims

1. A process for extracting oilseed protein flour and concentrate to obtain a light-colored protein isolate, the process comprising:
(a) mixing an oilseed protein product with a solvent mixture consisting of a non-polar solvent, a polar solvent, water and a food-grade acid,
(b) stirring the mixture to attain homogeneity,
(c) separating the solids from the solvent mixture,
(d) desolventizing the separated solids (a flour product), and
(e) preparing the protein isolate from the desolventized solids.

4,219,470

PROCESS FOR PREPARING A PROTEIN CONCENTRATE AND THE PRODUCT OBTAINED THEREBY

George B. Karnofsky, Pittsburgh, Pa., assignor to Dravo Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 611,066, Sep. 8, 1975, abandoned. This application Oct. 23, 1978, Ser. No. 953,641
Int. Cl.² A23J *1/14*
U.S. Cl. 260—123.5 13 Claims

1. A process for preparing a protein concentrate by extracting oleaginous seed material comprised of oil, carbohydrates and phosphates which comprises the steps of:
(a) contacting said oleaginous seed material with a dilute aqueous alcohol stream containing 50 to 70 weight percent alcohol to produce a first miscella containing carbohydrates and phosphatides;
(b) contacting residue seed material from step (a) with a first concentrated aqueous alcohol stream to displace aqueous alcohol from said residue seed material; and
(c) contacting residue seed material from step (b) with a second concentrated aqueous alcohol stream to produce a second miscella containing substantially all of said oil.

4,219,471

LIGNOSULFONATE DERIVATIVES

William J. Detroit, Schofield, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Feb. 9, 1978, Ser. No. 876,327
Int. Cl.² C07G *1/00*; C04B *7/02, 13/00*; E21B *33/13*
U.S. Cl. 260—124 R 13 Claims

1. A composition comprising:
a lignosulfonate or an alkali metal salt derivative thereof derived from sulfite waste liquor that has been subjected to alkaline oxidation, hydrolysis and partial desulfonation with subsequent resulfonation;
with subsequent reaction of said resulfonated lignosulfonate, at a temperature of from about 20° C. to about 110° C., with:
(a) a halocarboxylic acid;
(b) a halocarboxylic acid and a hydroxy-substituted lactone;
(c) a hydroxy-substituted lactone as aforesaid;
(d) a halocarboxylic acid and sequentially the derivative of a sugar acid containing spent sulfite liquor derived from the reaction of a spent sulfite liquor with a cyanide followed by hydrolysis of the resulting reaction product; or
(e) said derivative of a sugar acid-containing spent sulfite liquor.

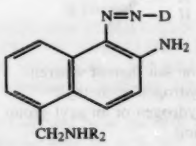
4,219,472

5-AMINOMETHYL-2-AMINO NAPHTHYL-(1) AZO DYES

Rudolf Hurter, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 22, 1978, Ser. No. 908,498
Claims priority, application Luxembourg, May 27, 1977, 77430
Int. Cl.² C09B *62/08, 62/24, 62/40, 62/50*
U.S. Cl. 260—145 B 7 Claims

1. An azo dye of the formula



wherein D is the radical of a diazo component; and R_2 is hydrogen, —COR or —SO_2R where R is methyl, ethyl, n-propyl, isopropyl, butyl, benzyl or phenyl which is unsubstituted or substituted by alkyl, alkoxy or halo; and R_2 is a fiber-reactive radical capable of reacting with the hydroxy groups of cellulosic materials or with the NH groups of natural polyamide fibers to form a covalent bond therewith.

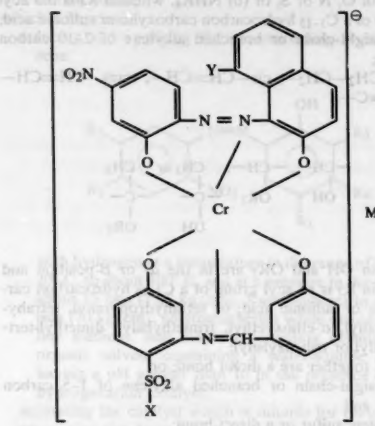
4,219,473

SUBSTITUTED UNSYMMETRICAL AZO, AZOMETHINE 1:2 CHROMIUM COMPLEXES

Fabio Beffa, Riehen, and Eginhard Steiner, Füllinsdorf, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 727,928, Sep. 29, 1976, abandoned, which is a continuation of Ser. No. 528,296, Nov. 29, 1974, abandoned. This application Dec. 9, 1977, Ser. No. 859,507
Int. Cl.² C09B *45/16*; D06P *1/10, 3/14, 3/24*
U.S. Cl. 260—151 1 Claim

1. A 1:2 chromium complex dye of the formula



wherein

X represents methyl, ethyl, chloromethyl, NH_2, methylamino, dimethylamino, ethylamino, diethylamino, isopropylamino, or methoxyethylamino,

Y represents hydrogen, lower alkanoylamino, lower alkoxycarbonylamino or benzoylamino, and

$M^{\oplus}$ is a cation.

4,219,474

HETEROCYCLIC PHENYL AZO HYDROXYBENZENES

Jerome J. Zalipsky, Melrose Park, and Dahyabhai M. Patel, Ambler, both of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Filed Mar. 20, 1978, Ser. No. 888,604

Int. Cl.[2] C07C *107/06;* **A61K** *31/63, 31/635, 31/655*

U.S. Cl. 260—156 **1 Claim**

1. A compound selected from the group consisting of 5-[(p-(4-(2-pyridylanilino))-N-phenyl)azo]salicylic acid and the sodium, potassium, aluminum, mono-, di-, and tri-ethanolamine and d-glucamine salts thereof.

4,219,475

AZO DYES FROM 2-AMINO-5-STYRYL-1,3,4-THIADIAZOLES

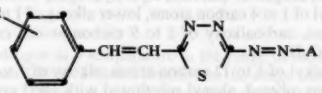
Mark D. Frishberg, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 25, 1979, Ser. No. 6,965

Int. Cl.[2] C09B *29/22, 31/14, 62/08*

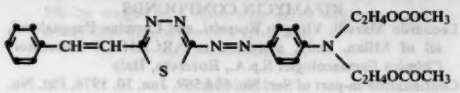
U.S. Cl. 260—158 **14 Claims**

1. Compounds having the formula



in which R is selected from —H, $—NO_2$, —CN, —Cl, and —Br, alkoxy of 1–8 carbons, alkyl of 1–8 carbons, alkoxycarbonyl of 1–8 carbons, or CF_3; and A is an aniline, tetrahydroquinoline, or benzomorpholine azo dye coupler moiety.

5. An azo compound according to claim 1 having the formula



4,219,476

TERTIARY ALIPHATIC AMIDAZO COMPOUND

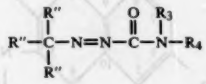
Ronald E. MacLeay, Williamsville, and Chester S. Sheppard, Kenmore, both of N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Division of Ser. No. 148,885, Jun. 1, 1971, Pat. No. 4,001,207, which is a division of Ser. No. 725,180, Apr. 29, 1968, abandoned, which is a continuation-in-part of Ser. No. 616,158, Feb. 15, 1967, abandoned, which is a continuation-in-part of Ser. No. 409,306, Nov. 5, 1964, abandoned. This application May 14, 1976, Ser. No. 686,603

Int. Cl.[2] C07C *107/02, 107/06;* **C08F** *4/04*

U.S. Cl. 260—192 **3 Claims**

1. A compound having the formula:



where:

(a) R″ is alkyl of 1–13 carbons, phenyl, benzyl or phenethyl, not more than one R″ being phenyl; and

(b) R_3 and R_4 are hydrogen, alkyl of 1–20 carbons, alkyl of 1–20 carbons containing a carboxy or methoxycarbonyl substituent, cycloalkyl of 3–6 carbons, or join to form alkylene of 2–16 carbons.

4,219,477

PENICILLIN DERIVATIVES

Yasuo Fujimoto, Tokyo, and Yasuo Kishi, Misato, both of Japan, assignors to Nippon Chemiphar Company Limited, Tokyo, Japan

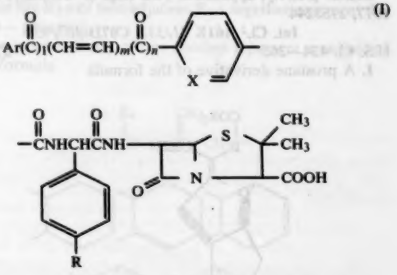
Filed Dec. 5, 1978, Ser. No. 966,628

Claims priority, application Japan, Dec. 6, 1977, 52-145651; Dec. 22, 1977, 52-153619; Aug. 21, 1978, 52-100965

Int. Cl.[2] C07D *499/68, 499/70*

U.S. Cl. 260—239.1 **16 Claims**

1. Penicillin derivatives and non-toxic salts thereof represented by the formula (I).



(I)

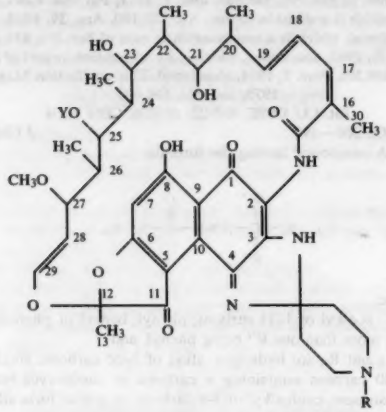
wherein Ar represents a phenyl or furyl, thienyl or pyridyl group which may be substituted by a halogen atom, hydroxy or lower alkoxy group, R represents a hydrogen atom or a hydroxy group, X represents CH or N, l and n are integers equal to 0 or 1 wherein the sum of l and n is 0 or 1, and m is an integer equal to 1 or 2.

4,219,478
RIFAMYCIN COMPOUNDS

Leonardo Marsili; Vittorio Rossetti, and Carmine Pasqualucci, all of Milan, Italy, assignors to ARCHIFAR Laboratori Chimico Farmacologici S.p.A., Rovereto, Italy

Continuation-in-part of Ser. No. 694,589, Jun. 10, 1976, Pat. No. 4,086,225. This application Jun. 6, 1978, Ser. No. 913,107
Claims priority, application Italy, Jun. 13, 1975, 5174 A/75
The portion of the term of this patent subsequent to Apr. 25, 1995, has been disclaimed.
Int. Cl.[2] C07D *491/20*
U.S. Cl. 260—239.3 P **5 Claims**

1. A rifamycin compound having the formula



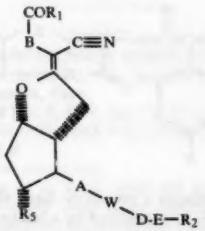
wherein R is a radical selected from the group consisting of linear alkyl having 4 to 8 carbon atoms, branched alkyl having 4 to 8 carbon atoms, and Y is —H or —$COCH_3$, and the 16, 17, 18, 19-tetrahydro derivatives and the 16, 17, 18, 19, 28, 29-hexahydro derivatives thereof.

4,219,479
5-CYANO-PROSTACYCLIN DERIVATIVES

Helmut Vorbrüggen; Werner Skuballa; Bernd Radüchel; Wolfgang Losert; Olaf Loge, all of Berlin; Bernd Müller, Aachen, and Gerda Mannesmann, Berlin, all of Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Nov. 24, 1978, Ser. No. 963,240
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1977, 2753244
Int. Cl.[2] A61K *31/335*; C07D *307/93*
U.S. Cl. 424—263 **27 Claims**

1. A prostane derivative of the formula



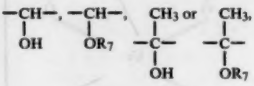
wherein

R_1 is (a) OR_3, wherein R_3 is hydrogen, C_{1-10} alkyl, C_4-cycloalkyl, C_{6-10} aryl, or an aromatic heteromonocycle containing 5 or 6 ring atoms of which only one is a hetero atom of O, N or S; or (b) NHR_4, wherein R_4 is the acyl group of a C_{1-15} hydrocarbon carboxylic or sulfonic acid;

B is straight-chain or branched alkylene of 2–10 carbon atoms;

A is —CH_2—CH_2—, cis—CH=CH—, trans—CH=CH— or C≡C—;

W is



wherein OH and OR_7 are in the α- or β-position and wherein R_7 is an acyl group of a C_{1-15} hydrocarbon carboxylic or sulfonic acid; or tetrahydropyranyl, tetrahydrofuranyl, α-ethoxyethyl, trimethylsilyl, dimethyl-tert-butylsilyl or tribenzylsilyl;

D and E together are a direct bond; or

D is straight-chain or branched alkylene of 1–5 carbon atoms; and

E is oxygen, sulfur or a direct bond;

R_2 is C_{1-10} alkyl, C_{1-10} alkenyl, C_{1-10} alkynyl, C_4-cycloalkyl, C_{6-10} aryl or an aromatic heteromonocycle containing 5 or 6 ring atoms of which only one is a hetero atom of O, N or S;

R_5 is OH or OR_7; and

for the compounds wherein R_3 is H, a salt thereof with a physiologically compatible base.

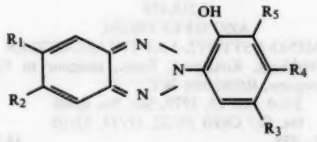
25. A method of lowering blood pressure in mammals which comprises administering an amount of a compound of claim 1 effective to lower blood pressure.

4,219,480
PROCESS FOR THE PRODUCTION OF 2-ARYL-2H-BENZOTRIAZOLES

Howard L. White, Warwick, and Casimir V. Krolewski, Coventry, both of R.I., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 668,343, Mar. 19, 1976, abandoned, which is a continuation-in-part of Ser. No. 577,386, May 14, 1975, abandoned. This application Sep. 20, 1977, Ser. No. 835,074
Int. Cl.[2] C07D *249/20*
U.S. Cl. 548—260 **23 Claims**

1. A process for the production of 2-aryl-2H-benzotriazoles of the formula I



(I)

wherein

R_1 is hydrogen or chlorine, R_2 is hydrogen, chlorine, lower alkyl of 1 to 4 carbon atoms, lower alkoxy of 1 to 4 carbon atoms, carboalkoxy of 2 to 9 carbon atoms, carboxy or —SO_3H,

R_3 is alkyl of 1 to 12 carbon atoms, alkoxy of 1 to 4 carbon atoms, phenyl, phenyl substituted with alkyl groups, said alkyl groups having 1 to 8 carbon atoms, cycloalkyl of 5 to 6 carbon atoms, carboalkoxy of 2 to 9 carbon atoms, chlorine, carboxyethyl or phenylalkyl of 7 to 9 carbon atoms,

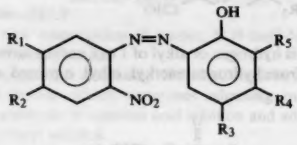
R_4 is hydrogen, lower alkyl of 1 to 4 carbon atoms, lower alkoxy of 1 to 4 carbon atoms, chlorine or hydroxyl, and

R_5 is hydrogen, alkyl of 1 to 12 carbon atoms, chlorine,

cycloalkyl of 5 to 6 carbon atoms or phenylalkyl of 7 to 9 carbon atoms,

which comprises

reducing and cyclizing the corresponding o-nitro-azobenzene

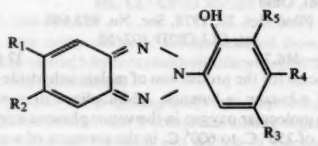


with hydrogen at a temperature in the range of from about 20° C. to about 100° C. and at a pressure in the range from about 15 psia (1.05 kg/cm_2, 1 atmosphere) to about 1000 psia (70 kg/cm_2, 66 atmospheres) while mixed in an alkaline medium, said medium consisting essentially of an organic solvent containing a water-soluble amine and having a pH greater than 10 in the presence of a nickel hydrogenation catalyst,

separating the catalyst which is suitable for recycle, and

recovering the desired 2-aryl-2H-benzotriazole.

19. An improved process for the production of 2-aryl-2H-benzotriazoles of the formula I



(I)

wherein

R_1 is hydrogen or chlorine,

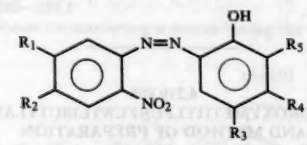
R_2 is hydrogen, chlorine, lower alkyl of 1 to 4 carbon atoms, lower alkoxy of 1 to 4 carbon atoms, carboalkoxy of 2 to 9 carbon atoms, carboxy or $—SO_3H$,

R_3 is alkyl of 1 to 12 carbon atoms, alkoxy of 1 to 4 carbon atoms, phenyl, phenyl substituted with alkyl groups, said alkyl groups having 1 to 8 carbon atoms, cycloalkyl of 5 to 6 carbon atoms, carboalkoxy of 2 to 9 carbon atoms, chlorine, carboxyethyl or phenylalkyl of 7 to 9 carbon atoms,

R_4 is hydrogen, lower alkyl of 1 to 4 carbon atoms, lower alkoxy of 1 to 4 carbon atoms, chlorine or hydroxyl, and

R_5 is hydrogen, alkyl of 1 to 12 carbon atoms, chlorine, cycloalkyl of 5 to 6 carbon atoms or phenylalkyl of 7 to 9 carbon atoms,

by reducing and cyclizing the corresponding o-nitroazobenzene



with hydrogen at a temperature in the range of from 20° C. to about 100° C. and at a pressure in the range from about 15 psia (1.05 kg.cm_2 1 atmosphere) to about 1000 psia (70 kg/cm_2, 66 atmospheres) while mixed in an alkaline medium having a pH greater than 10 in the presence of a nickel hydrogenation catalyst and recovering the desired 2-aryl-2H-benzotriazole wherein the improvement comprises

using as the alkaline medium an aqueous alkaline or an aqueous hydrocarbon alkaline medium, said medium containing an alkali metal hydroxide and containing from 0.1 to 5% by weight of a dispersing agent which is a polyhydroxyalkyl monoester of a fatty acid.

4,219,481

CROSSLINKABLE BIS-IMIDYL DERIVATIVES

Roland Darms, Therwil; Vratislav Kvita, Muttenz, and Gerd Greber, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

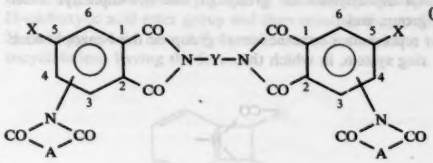
Division of Ser. No. 747,443, Dec. 6, 1976, Pat. No. 4,126,619. This application Sep. 7, 1978, Ser. No. 940,409

Claims priority, application Switzerland, Dec. 19, 1975, 16510/75

Int. Cl.[2] **C07D** *209/34*

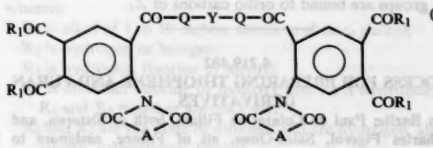
U.S. Cl. 260—326 C **6 Claims**

1. A crosslinkable compound of the formula



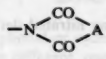
(Ia')

or



(Ib),

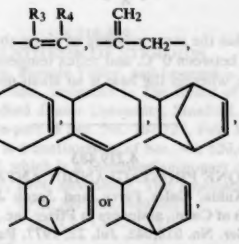
wherein the X s independently of one another represent hydrogen or, if the radical



is in the 4-position of the benzene ring, also $—COR_2$, the R_2 s independently of one another represent hydroxyl, phenoxy; phenoxy substituted by one or two nitro groups, by one alkyl of 1 to 2 carbon atoms, by one alkoxy of 1 to 2 carbon atoms or by two or five halogen atoms; alkoxy of 1 to 18 carbon atoms or an O—M+ group,

the R_1 s (independently of one another have the same meaning as the R_2 s or two adjacent R_1 s together represent the —O— grouping,

the A s independently of one another represent a radical of the formula



R_3 and R_4 independently of one another represent hydrogen, chlorine, bromine or methyl,

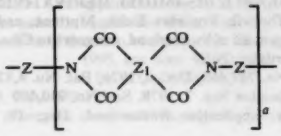
M+ represents an alkali metal cation, a trialkylammonium

cation having 3–24 carbon atoms, or a quaternary ammonium cation,

Q represents —NH—, and

Y represents a structural element of the formula

(IIc)



wherein a represents a number from 1–100,

Z represents alkylene of 2 to 10 carbon atoms, 1,3-phenylene, 1,4-phenylene, the 4,4'-diphenylmethane group, the 4,4'-diphenylsulfone group or the 4,4'-diphenyl ether group, and

Z_1 represents a benzenetetrayl group or the benzophenone ring system, in which the

groups are bound to ortho carbons of Z_1.

4,219,482

PROCESS FOR PREPARING THIOPHENE AND FURAN DERIVATIVES

Yves Bazile; Paul de Cointet de Fillain, both of Sisteron, and Charles Pigerol, Saint-Ouen, all of France, assignors to Labaz, Paris, France

Filed Nov. 14, 1978, Ser. No. 960,563

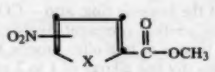
Claims priority, application France, Nov. 11, 1977, 77 34553

Int. Cl.[2] C07D *333/42, 333/44, 307/70, 307/71*

U.S. Cl. 549—68 A **7 Claims**

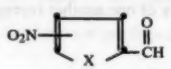
1. Process for preparing nitrated derivatives of the general formula:

I



in which X represents an oxygen or sulphur atom, by the reaction involving the addition of a halogen to a methanolic solution of a base and of an aldehyde of the general formula:

II



in which X has the same meaning as given above, the reaction taking place between 0° C. and reflux temperature of the reaction mixture, wherein the base is an alkali metal carbonate or bicarbonate.

4,219,483

4-PYRONE PROSTAGLANDIN ANTAGONISTS

Donald E. Kuhla, Gales Ferry, and Jacob J. Plattner, East Lyme, both of Conn., assignors to Pfizer Inc., New York, N.Y.

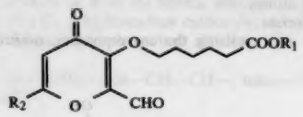
Division of Ser. No. 818,043, Jul. 22, 1977, Pat. No. 4,132,847.

This application Sep. 11, 1978, Ser. No. 941,538

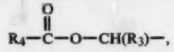
Int. Cl.[2] C07D *309/12*

U.S. Cl. 260—345.7 P **10 Claims**

1. A compound of the formula



wherein R_1 is hydrogen or alkyl of 1 to 6 carbon atoms; and R_2 is selected from hydrogen, methyl, ethyl, n-propyl and



wherein R_3 is selected from hydrogen, methyl and ethyl and R_4 is selected from alkyl of 1 to 4 carbon atoms or phenyl.

4,219,484

PRODUCTION OF MALEIC ANHYDRIDE FROM FOUR-CARBON HYDROCARBONS USING CATALYSTS PREPARED BY WATER REFLUX TECHNIQUES

Ernest C. Milberger, Solon; Serge R. Dolhyj, Parma, and Noel J. Bremer, Kent, all of Ohio, assignors to Standard Oil Company (Ohio), Ohio

Filed Oct. 23, 1978, Ser. No. 953,660

Int. Cl.[2] C07D *307/60*

U.S. Cl. 260—346.75 **27 Claims**

1. In a process for the production of maleic anhydride by the oxidation of n-butane, n-butenes, 1,3-butadiene or a mixture thereof with molecular oxygen in the vapor phase at a reaction temperature of 250° C. to 600° C. in the presence of a catalyst comprising the mixed oxides of vanadium and phosphorus, the improvement wherein the catalyst is prepared by

(a) forming an aqueous oxide slurry of a vanadium compound containing pentavalent vanadium;

(b) adding to said aqueous oxide slurry a mineral acid-free, inorganic reducing agent capable of reducing said pentavalent vanadium to a valence state below +5 to obtain an aqueous slurry containing reduced vanadium, wherein said reducing agent is selected from the group consisting of ammonia, hydrazine, hydrazine hydrate, a finely divided metal or colloidal metal;

(c) adding a phosphorus compound containing pentavalent phosphorus before the addition of the reducing agent or after the addition of the reducing agent;

(d) heating said aqueous oxide slurry under reflux conditions;

(e) removing the water from the resulting slurry to form a dried catalyst; and

(f) calcining the dried catalyst at a temperature of 250° C. to 600° C.

4,219,485

BIS(HYDROXYMETHYLFURFURYL)BUTYLAMINE AND METHOD OF PREPARATION

Andrew P. Dunlop, Riverside, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Jul. 31, 1979, Ser. No. 62,310

Int. Cl.[2] C07D *307/52*

U.S. Cl. 260—347.7 **2 Claims**

1. As a new composition of matter, bis(hydroxymethylfurfuryl)butylamine.

2. A process for preparing bis(hydroxymethylfurfuryl)-butylamine which comprises admixing n-butylamine with formaldehyde in aqueous acid solution and adding to the mixture furfuryl alcohol at a temperature not above about 45° C.

4,219,486

N,N-BIS(5-HYDROXYMETHYLFURFURYL)METHYLAMINE AND PROCESS OF PREPARATION

Andrew P. Dunlop, Riverside, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Jul. 31, 1979, Ser. No. 62,368
Int. Cl.[2] C07D *307/52*
U.S. Cl. 260—347.7 **2 Claims**

1. As a new composition of matter, N,N-bis(5-hydroxymethylfurfuryl)methylamine.

2. A process for preparing N,N-bis(5-hydroxymethylfurfuryl)methylamine which comprises admixing methylamine with formaldehyde in aqueous acid solution and adding to the mixture furfuryl alcohol.

4,219,487

TRIS[5-HYDROXYMETHYLFURFURYL]AMINE AND PROCESS OF PREPARATION

Andrew P. Dunlop, Riverside, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Jul. 31, 1979, Ser. No. 62,369
Int. Cl.[2] C07D *307/52*
U.S. Cl. 260—347.7 **3 Claims**

1. A new composition of matter selected from the group consisting of tris[5-hydroxymethylfurfuryl]amine and the hydrochloride salt thereof.

2. A process for preparing tris[5-hydroxymethylfurfuryl]amine hydrochloride which comprises mixing together ammonium chloride and formalin and adding in increments to the resulting mixture furfuryl alcohol while maintaining the reaction mixture below a temperature of about 45° C. and recovering the resulting solution containing tris[5-hydroxymethylfurfuryl]amine hydrochloride.

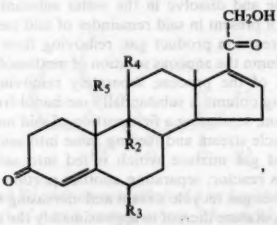
4,219,488

PROCESS FOR PREPARING STEROIDAL [16α,17-b]NAPHTHALENO-21-CARBOXYLIC ACID ESTERS

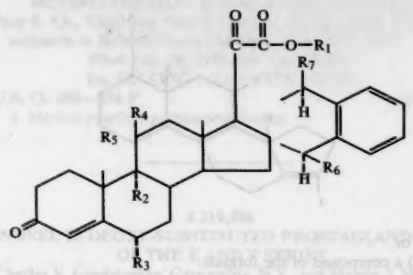
Ravi K. Varma, Belle Mead, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 26, 1979, Ser. No. 33,357
Int. Cl.[2] C07J *5/00*
U.S. Cl. 260—397.1 **9 Claims**

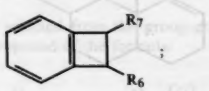
1. A process for converting a steroid having the formula



or the 1,2-dehydro derivative thereof, to a steroid having the formula



or the 1,2-dehydro derivative thereof, which comprises first converting the 21-hydroxy group of the starting steroid to a 21-carboxylic acid ester group and then reacting the resulting 21-carboxylic acid ester-Δ^{16}-steroid intermediate with a benzocyclobutene having the formula



;

wherein

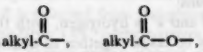
R_1 is alkyl of 1 to 10 carbon atoms, aryl or arylalkyl;

R_2 is hydrogen or halogen;

R_3 is hydrogen, fluorine or methyl;

R_4 is chlorine, fluorine or hydroxy and R_5 is hydrogen, or R_4 and R_5 together are =O; and

R_6 and R_7 are the same or different and are hydrogen, alkyl, alkoxy, carboalkoxy, formyl,



hydroxy, halogen, phenyl or cyano with the proviso that when R_6 and R_7 are different, one of R_6 and R_7 is hydrogen.

4,219,489

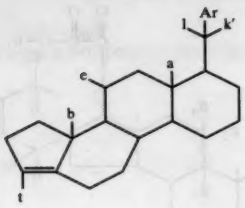
SYNTHESIS OF STEROIDS

William S. Johnson, Portola Valley, and Leonard A. Bunes, San Carlos, both of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Continuation-in-part of Ser. No. 767,727, Feb. 11, 1977, abandoned, which is a continuation of Ser. No. 628,447, Nov. 3, 1975, abandoned, which is a continuation-in-part of Ser. No. 527,830, Nov. 27, 1974, abandoned. This application Sep. 5, 1978, Ser. No. 939,595
Int. Cl.[2] C07J *1/00*
U.S. Cl. 260—397.3 **8 Claims**

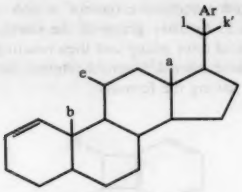
3. A compound which is a member of the group consisting of:

(1) a compound of the formula:



or

(2) a compound of the formula:



wherein:

a is hydrogen or methyl;

b is hydrogen or methyl;

e is hydrogen, methyl, hydroxy or alkoxy of up to 6 carbon atoms;

Ar is a carbocyclic aromatic compound of from 6 to 12 annular carbon atoms having from 0 to 2 substituents, said substituents selected from the group consisting of hydroxy, thiol, alkoxy of up to 4 carbon atoms, alkylthio of up to 4 carbon atoms, and alkyl of from 1 to 4 carbon atoms;

l is hydroxy and k' is hydrogen, with the proviso that l and k' may be taken together to define oxo; and

t is hydrogen or alkyl of from 1 to 2 carbon atoms.

4,219,490

FERROCENYL THIOESTERS

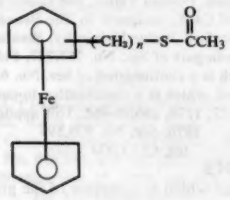
Carl Gotzmer, Jr., Accokeek, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 14, 1979, Ser. No. 39,059

Int. Cl.[2] C07F *15/02*

U.S. Cl. 260—439 CY **3 Claims**

1. A ferrocenyl thioester of the formula



wherein n is an interger of from 2 to 4.

4,219,491

SYNTHESIZING MIXED HYDRIDE ALKOXYDERIVATIVES OF ALUMINUM AND ALKALINE-EARTH METALS, AND PRODUCTS OBTAINED THEREBY

Salvatore Cucinella, San Donato Milanese, Italy, assignor to Anic S.p.A., Italy

Filed Nov. 15, 1978, Ser. No. 960,781

Int. Cl.[3] C07F *5/06*

U.S. Cl. 260—448 AD **11 Claims**

1. Mixed alkoxy-hydride compounds containing aluminum and alkaline-earth metals having the formula

$$M[AlH_{4-n}(OR)_n]_2$$

which may be complexed with a Lewis base, wherein M is an alkaline earth metal, R is selected from an aliphatic, cycloaliphatic or aromatic group having 1 to 20 carbon atoms, and n is a number between 0.5 and 3.5.

4,219,492

PROCESS FOR MANUFACTURING METHANOL

Keizo Konoki, Tokyo, and Shinkichi Nozawa, Funabashi, both of Japan, assignors to Toyo Engineering Corporation, Tokyo, Japan

Filed Apr. 9, 1979, Ser. No. 28,385

Claims priority, application Japan, Apr. 18, 1978, 53-44800

Int. Cl.[2] C07C *31/06*

U.S. Cl. 260—449.5 **3 Claims**

1. A process for manufacturing methanol, which comprises the steps of:

feeding a gaseous hydrocarbon feedstock and steam into a steam reforming reactor containing steam reforming catalyst and effecting a steam reforming reaction, at a temperature of from 850° to 1050° C., at a pressure of 30 to 50 Kg/cm^2 gauge, to produce a reformed gas mixture containing water vapor, H_2, CO and CO_2; then cooling said reformed gas mixture to condense the water vapor and separating the condensed water vapor from the remainder of said reformed gas mixture to obtain a water-free reformed gas mixture which is at ambient temperature and at about the same pressure as the pressure in said steam reforming reactor; feeding said water-free reformed gas mixture into a methanol synthesis reactor without materially changing the pressure thereof and in said methanol synthesis reactor contacting said water-free reformed gas mixture with a methanol synthesis catalyst, at a pressure substantially equal to the pressure in said steam reforming reactor, to produce a methanol-containing reaction product gas; then cooling said methanol-containing reaction product gas to condense part of the methanol contained therein and then separating the condensed methanol from the remainder of said methanol-containing reaction product gas; removing the condensed methanol as a first product of the process; then flowing said remainder of said methanol-containing reaction product gas into a scrubbing column and therein contacting same with liquid water to condense and dissolve in the water substantially all the methanol present in said remainder of said methanol-containing reaction product gas; removing from said scrubbing column the aqueous solution of methanol as a second product of the process; separately removing from the scrubbing column a substantially methanol-free gas recycle stream; separating a first portion of said methanol-free gas recycle stream and feeding same into said water-free reformed gas mixture which is fed into said methanol synthesis reactor; separating another portion of said methanol-free gas recycle stream and increasing the pressure and temperature thereof to approximately the temperature and pressure in said steam reforming reactor and then feeding same into said steam reforming reactor along with said gaseous hydrocarbon feedstock and said steam.

4,219,493

SUBSTITUTED O-ALKYLSULFONYLGLYCOLIC ACID ANILIDES

Adolf Fischer, deceased, late of Mutterstadt, Fed. Rep. of Germany (by Caecilia Emma Fischer, heiress-at-law); Wolfgang Rohr, Mannheim, and Gerhard Paul, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

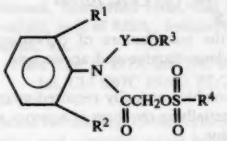
Continuation of Ser. No. 638,957, Dec. 8, 1975, abandoned. This application Dec. 27, 1978, Ser. No. 974,620

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1974, 2458972

Int. Cl.[2] C07C *143/68*

U.S. Cl. 260—456 A 8 Claims

1. A substituted O-alkylsulfonylglycolic acid anilide of the formula



I,

where R^1 denotes hydrogen, methyl, ethyl, n-propyl or isopropyl, R^2 denotes methyl, ethyl, n-propyl or isopropyl, R^3 denotes alkyl of a maximum of 3 carbon atoms, alkenyl of 3 or 4 carbon atoms, cyclopropyl or cyclopropylmethyl, Y denotes an ethylene chain monosubstituted by ethyl or having one or two methyl substituents, and R^4 denotes lower alkyl of a maximum of 4 carbon atoms or halogen-substituted alkyl of a maximum of 4 carbon atoms.

4,219,494

O-AMINOSULFONYLGLYCOLIC ANILIDES

Adolf Fischer, deceased, late of Mutterstadt, Fed. Rep. of Germany (by Caecilia Emma Fischer, heiress-at-law); Hanspeter Hansen, Ludwigshafen, Fed. Rep. of Germany; Wolfgang Rohr, and Gerhard Hamprecht, both of Mannheim, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

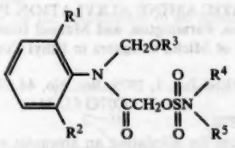
Continuation of Ser. No. 560,310, Mar. 20, 1975, abandoned. This application Feb. 23, 1979, Ser. No. 14,894

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1974, 2417764

Int. Cl.[2] C07C *143/68*

U.S. Cl. 260—456 A 16 Claims

1. An O-aminosulfonylglycolic anilide of the formula



where R^1 and R^2 each denote alkyl of 1 to 4 carbon atoms, R^3 denotes alkyl of 1 to 6 carbon atoms, R^4 and R^5 respectively denote methyl, ethyl, propyl, isopropyl, butyl, isobutyl, secbutyl, tert-butyl, pentyl or hexyl, and R^4 may further denote hydrogen.

4,219,495

METHOXYMETHYL P-TOLUENESULFONATE

Jeng S. Lin, Clay, and Paul D. Sleezer, DeWitt, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed Feb. 28, 1979, Ser. No. 16,453

Int. Cl.[3] C07C *143/68;* C07D *499/08*

U.S. Cl. 260—456 P 1 Claim

1. Methoxymethyl p-toluenesulfonate.

4,219,496

NOVEL 11-DEOXY-SUBSTITUTED PROSTAGLANDINS OF THE E AND F SERIES

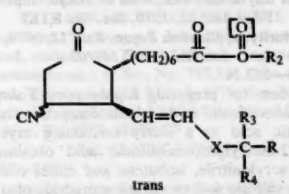
Charles V. Grudzinskas, Garnerville, N.Y., and Martin J. Weiss, Oradell, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 776,445, Mar. 10, 1977, which is a division of Ser. No. 552,403, Feb. 24, 1975, Pat. No. 4,057,571, which is a continuation-in-part of Ser. No. 274,559, Jul. 24, 1972, Pat. No. 4,141,914. This application Mar. 10, 1978, Ser. No. 885,526

Int. Cl.[2] C07C *121/46*

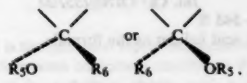
U.S. Cl. 260—464 5 Claims

1. A compound selected from the group consisting of an optically active compound of the formula:



trans

and a racemic compound of that formula and the mirror image thereof wherein R is selected from the group consisting of an alkyl group having from 3 to 7 carbon atoms, an alkenyl group having from 3 to 7 carbon atoms, phenyl, phenoxy and phenoxy substituted with one or two groups selected from the group consisting of C_1 to C_4 alkyl, C_1 to C_4 alkoxy, nitro, halogen and trifluoromethyl; R_2 is hydrogen; R_3 is selected from the group consisting of hydrogen, fluorine and C_1 to C_4 alkyl; R_4 is selected from the group consisting of hydrogen, fluorine and C_1 to C_4 alkyl; X is a divalent moiety of the formulae:



wherein R_5 is hydrogen and R_6 is selected from the group consisting of hydrogen and C_1 to C_4 alkyl with the proviso that when R_6 is C_1 to C_4 alkyl then R_5 must be hydrogen; and the non-toxic cationic salts thereof.

4,219,497

CHROMOGENIC SUBSTRATES

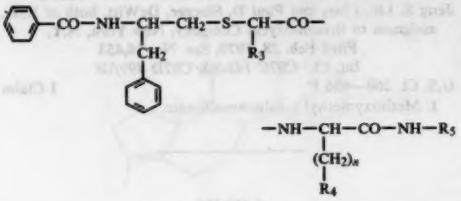
Jacob J. Plattner; Stephen D. Stroupe, and Houston F. Voss, all of Libertyville, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Apr. 6, 1979, Ser. No. 27,578

Int. Cl.[2] C07C *103/87, 129/12*

U.S. Cl. 260—501.14 4 Claims

1. A compound of the formula



and the biologically acceptable acid addition salts thereof wherein R_3 represents an alkyl having 1–6 carbon atoms; R_4 represents amino or guanidino; R_5 represents p-nitrophenyl, methylnitrophenyl, dinitrophenyl, naphthyl, or nitronaphthyl; and n is 3 or 4.

4,219,498

PROCESS FOR PREPARING HIGHLY PURE-2-ACRYLAMIDO-2-METHYLPROPANESULFONIC ACID

Shunichi Doi, and Masatake Kamogawa, both of Yokohama, Japan, assignors to Nitto Chemical Industry Co., Ltd. and Mitsubishi Rayon Co., Ltd., both of Tokyo, Japan

Filed Jan. 31, 1979, Ser. No. 8,113

Claims priority, application Japan, Jun. 12, 1978, 53/69928

Int. Cl.[2] C07C *143/02*

U.S. Cl. 260—513 N **7 Claims**

1. A process for preparing highly pure 2-acrylamido-2-methylpropanesulfonic acid, which comprises the steps of adding acetic acid to a slurry containing crystals of 2-acrylamido-2-methylpropanesulfonic acid obtained by the reaction of acrylonitrile, isobutene and either conc. sulfuric acid, fuming sulfuric acid or sulfuric anhydride plus water in a reaction medium, then distilling the resulting mixture to replace the reaction medium with the acetic acid, adding water or hydrous acetic acid, heating the mixture to dissolve said crystals, and subjecting the solution to recrystallization.

4,219,499

SULFAMIC ACID HALIDES

Gerhard Hamprecht, Mannheim, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Fed. Rep. of Germany

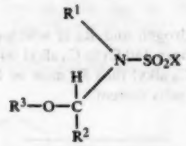
Division of Ser. No. 807,064, Jun. 16, 1977, Pat. No. 4,131,620. This application Jun. 1, 1978, Ser. No. 911,363

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1976, 2634485

Int. Cl.[2] C07C *155/00*

U.S. Cl. 260—543 R **9 Claims**

1. Sulfamic acid halides of the formula



wherein R^1 is alkyl of 1 to 20 carbon atoms which may be unsubstituted or substituted by one or more halogen atoms in the β-, γ- and δ-positions, to the nitrogen, or is cycloalkyl of 4 to 8 carbon atoms, R^2 is hydrogen or is alkyl of 1 to 18 carbon atoms which is unsubstituted or substituted by one or more halogen atoms in the β-, γ- and δ-positions, to the nitrogen, R^3 is alkyl of 1 to 20 carbon atoms which is unsubstituted or substituted by 1 or 2 ether groups or by 1 or 2 halogen atoms or is alkenyl or alkynyl, of 2 to 20 carbon atoms, which is unsubstituted or substituted either by 1 or 2 ether groups or by 1 or 2 halogen atoms, or is cycloalkyl of 4 to 8 carbon atoms which is unsubstituted or substituted by one chlorine atoms or is aralkyl of 7 to 12 carbon atoms, and X is halogen, with the proviso that if R^1 is an aliphatic radical substituted by halogen in the β-position, R^3 is always one of said cycloaliphatic or araliphatic radical.

4,219,500

PROCESS FOR THE MANUFACTURE OF N,N'-DIACETYLETHYLENE DIAMINE

Gunter Roscher, and Wilfried Pressler, both of Kelkheim, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 28, 1979, Ser. No. 53,033

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1978, 2828765

Int. Cl.[2] C07C *103/44*

U.S. Cl. 260—561 R **1 Claim**

1. Process for the manufacture of N,N'-diacetylethylene diamine from ethylene diamine and acetic acid, which comprises

(a) adding the stoichiometrically required amount of acetic acid at least partially in the form of aqueous acetic acid to ethylene diamine,

(b) distilling off at least partially the water contained in the reaction mixture,

(c) adding an excess amount of acetic acid to the remaining product,

(d) heating the reaction mixture to distill off the aqueous acetic acid formed and withdrawing the N,N'-diacetylethylene diamine obtained as sump product, and

(e) recycling the aqueous acetic acid distilled off into step (a) of the process.

4,219,501

ANTI-INFLAMMATORY METHOD

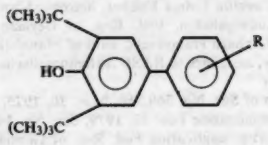
George G. I. Moore, Birchwood, Minn., assignor to Riker Laboratories, Inc., Northridge, Calif.

Division of Ser. No. 861,892, Dec. 19, 1977, Pat. No. 4,172,151, which is a division of Ser. No. 797,137, May 16, 1977, abandoned. This application Jul. 6, 1979, Ser. No. 55,334

Int. Cl.[2] C07C *103/38*

U.S. Cl. 260—562 A **3 Claims**

1. A compound of the formula



wherein R is selected from alkanamido of 2 to 4 carbon atoms and trifluoroacetamido.

4,219,502

AROMATIC AMINE ALKYLATION PROCESS

Kryn G. Ihrman, Farmington, and Manuel Brandt, Huntington Woods, both of Mich., assignors to Ethyl Corporation, Richmond, Va.

Filed Jun. 1, 1979, Ser. No. 44,671

Int. Cl.[2] C07C *85/24*

U.S. Cl. 260—578 **6 Claims**

1. In a process for alkylating an aromatic amine, said aromatic amine having an unsubstituted position on a nuclear benzene ring capable of alkylation, said process comprising reacting an olefinic hydrocarbon with said aromatic amine in the presence of an aluminum anilide-type catalyst, said aromatic amine containing small amounts of a nickel compound capable of inhibiting the rate and/or degree of alkylation, the

improvement which comprises adding to said aromatic amine prior to conducting said alkylation a small amount of a promoter selected from the group consisting of hydrogen sulfide and sulfide generating compounds, said small amount of promoter being sufficient to reduce the inhibiting effect of said nickel compound.

4,219,503

PROCESS FOR PRODUCING 2,6-DIALKYLANILINES

John C. Wollensak, Bloomfield Hills, and Donald H. Lucast, West Bloomfield, both of Mich., assignors to Ethyl Corporation, Richmond, Va.

Filed Aug. 6, 1979, Ser. No. 63,783
Int. Cl.² C07C *85/00, 85/20*
U.S. Cl. 260—578 **24 Claims**

1. In a process for making 2,6-dialkylaniline by reacting an aromatic amine, said aromatic amine having at least one nuclear position ortho to an amine group unsubstituted except for hydrogen, and at least one hydrogen atom bonded to the amine groups, with an olefin selected from (a) ethylene when the other nuclear position ortho to said amine group is unsubstituted or substituted with a secondary or tertiary alkyl group containing 3–6 carbon atoms or (b) a C_{2-6} olefin when said other nuclear position ortho to said amine group is substituted with methyl or ethyl, in the presence of an aluminum anilide catalyst, deactivating said aluminum anilide catalyst and distilling the resultant product to recover most of the 2,6-dialkylaniline formed in said process leaving a residual product, the improvement comprising catalytically hydrogenating said residual product to form additional, 2,6-dialkylaniline and recovering said additional 2,6-dialkylaniline from the hydrogenated residual product.

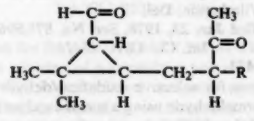
4,219,504

PREPARATION OF 2-(2-ACETYL-3-OXOBUTYL)-3,3-DIMETHYLCYCLOPROPANECARBALDEHYDE

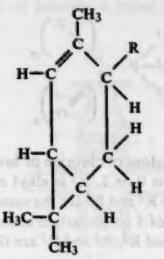
Pieter A. Verbrugge, and Petrus A. Kramer, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Feb. 23, 1979, Ser. No. 14,529
Claims priority, application United Kingdom, Mar. 2, 1978, 832678/78
Int. Cl.² C07C *45/00*
U.S. Cl. 568—365 **14 Claims**

1. A process for the preparation of an aldehyde of the general formula:



wherein R represents an alkanoyl group containing fewer than five carbon atoms, which comprises ozonolysis of a 4-substituted-2-carene compound of the general formula:



(II)

wherein R has the same meaning as in the general formula I, with a gaseous mixture comprising ozone and oxygen in the presence of a sterically hindered phenol or aromatic amine as an antioxidant, followed by reductive cleavage of the ozonlysis product obtained.

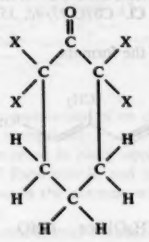
4,219,505

PROCESS FOR PREPARING TETRAHALOCYCLOHEXANONE

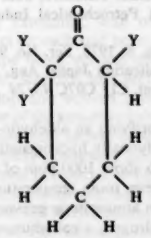
Brian J. Needham, Newton, and John Miller, Cambridge, both of England, assignors to Fisons Limited, England

Continuation-in-part of Ser. No. 745,921, Nov. 29, 1976, abandoned. This application May 1, 1978, Ser. No. 901,839
Claims priority, application United Kingdom, May 11, 1977, 19685/77; Nov. 24, 1977, 48890/77
Int. Cl.² C07C *49/30*
U.S. Cl. 568—348 **12 Claims**

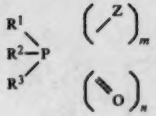
1. A process for preparing a tetrahalocyclohexanone compound of formula



where each X is the same and represents a chlorine or bromine atom, which process comprises reacting in the liquid phase X_2, where X is as defined above, with a cyclohexanone compound of the formula



where each Y is the same or different and represents a hydrogen atom or X, in the presence as catalyst of



where Z represents an atom of chlorine or bromine; n is 0 or 1; and when n is 0, m is 0 or 2, R^1 is alkyl of 1 to 10 carbon atoms or phenyl, and R^2 and R^3 are the same or different and are hydrogen, alkyl of 1 to 10 carbon atoms or phenyl; and when n is 1, m is 0, and R^1, R^2 and R^3 are the same and each is

alkyl of 1 to 10 carbon atoms or phenyl, or R^1 is hydrogen and R^2 and R^3 are the same or different and each is alkyl of 1 to 10 carbon atoms or phenyl;

or a salt of such an organophosphorus compound, at a temperature of 60° to 160° C.

4,219,506

PROCESS FOR PRODUCING VITAMIN A

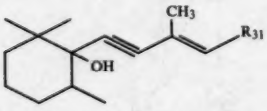
Gary L. Olson, Westfield, and Gabriel Saucy, Essex Fells, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 764,241, Jan. 31, 1977, which is a division of Ser. No. 603,480, Aug. 11, 1975, Pat. No. 4,022,807, which is a division of Ser. No. 464,398, Apr. 26, 1974, Pat. No. 3,928,400, which is a continuation-in-part of Ser. No. 303,162, Nov. 2, 1972. This application Jan. 17, 1979, Ser. No. 4,127

Int. Cl.² C07C *47/46, 35/08*

U.S. Cl. 568—496 **3 Claims**

1. A compound of the formula:



wherein R_{31} is —CH_2OH or —CHO.

4,219,507

PROCESS FOR PURIFYING ALDEHYDE-CONTAINING KETONES

Hisaya Miki, and Mitsuki Yasuhara, both of Ichihara, Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed Aug. 8, 1978, Ser. No. 931,896

Claims priority, application Japan, Aug. 16, 1977, 52-97465

Int. Cl.² C07C *45/24*

U.S. Cl. 568—411 **11 Claims**

1. A process for purifying an aldehyde-containing acetone which comprises catalytically hydrogenating a crude acetone containing about 50 to about 1000 ppm of aliphatic aldehydes at a temperature of from room temperature to about 100° C. and a pressure of from atmospheric pressure to 10 kg/cm^2-G, in the presence of hydrogen, a palladium-containing catalyst, and about 0.4 to about 15% by weight, based on the weight of crude ketone, of water; distilling the hydrogenated product; and recovering a fraction containing the acetone.

4,219,508

PROCESS FOR THE PREPARATION OF LOW MOLECULAR WEIGHT POLYHYDROXYL COMPOUNDS

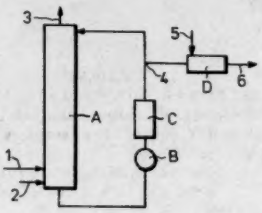
Kuno Wagner, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 30, 1977, Ser. No. 829,173

Claims priority, application Fed. Rep. of Germany, May 11, 1977, 2721186

Int. Cl.² C07C *29/00, 45/00*

U.S. Cl. 568—387 **42 Claims**



1. In a process for the preparation of a mixture of low molecular weight polyhydric alcohols, hydroxyaldehydes and hydroxyketones comprising condensing formaldehyde in an aqueous reaction medium in the presence of metal compounds as catalysts and of compounds capable of enediol formation as co-catalysts, stopping the condensation of formaldehyde with itself by cooling and/or by inactivation of the catalyst with acids when the reaction mixture has a residual formaldehyde content of from 0 to 10% by weight, and removing the catalyst, the improvement wherein synthesis gases containing formaldehyde are continuously or discontinuously introduced at temperatures of between 10° and 150° C. into an absorption liquid comprising

(a) 5 to 99% by weight of water,

(b) 0.1 to 90% by weight of compounds capable of enediol formation as co-catalysts,

(c) 0 to 20% by weight of soluble or insoluble metal compounds as catalysts optionally bound to high molecular weight carriers, and

(d) 0to 60% by weight of one or more monohydric or higher hydric organic compounds having a molecular weight of from 32 to 10,000, and having a pH of 3 to 10, with the formaldehyde being condensed at the same time or, if the absorption solution contains no catalyst, the formaldehyde is condensed subsequently by addition of catalyst.

4,219,509

METHANOL OXIDATION/DEHYDROGENATION OVER SILVER-GOLD ALLOY

Norman A. Nielsen, and V. N. Mallikarjuna Rao, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 23, 1978, Ser. No. 871,596

Int. Cl.² C07C *45/16*

U.S. Cl. 568—473 **4 Claims**

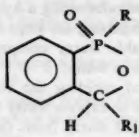
1. In a process for selective oxidation/dehydrogenation of methanol to formaldehyde using a metal catalyst at a temperature of from 550° to 700° C. in a reaction system having a first and second stage the improvement wherein the metal catalyst in the first stage is silver and in the second stage is a silver-gold alloy containing 5 to 80 atomic % gold.

4,219,510
BENZOXAPHOSPHOLES

James A. Miles, Olivette, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jul. 6, 1979, Ser. No. 55,429
Int. Cl.[2] C07F 9/15; A01N 9/36
U.S. Cl. 260—936 10 Claims

1. A compound of the formula



wherein R is selected from the group consisting of hydroxy, lower alkyl, lower alkoxy, phenyl and haloalkyl phenyl; and R_1 is selected from the group consisting of hydrogen and lower alkyl.

4,219,511
PREPARATION OF O,O-DIETHYL-O-(1-PHENYL-2-CYANO-PROP-1-ENYL)-THIONOPHOSPHORIC ACID ESTER

Hans-Jochem Riebel, Selters, and Claus Stölzer, Wuppertal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 13, 1979, Ser. No. 29,815
Claims priority, application Fed. Rep. of Germany, May 5, 1978, 2819825
Int. Cl.[2] C07F 9/165
U.S. Cl. 260—973 8 Claims

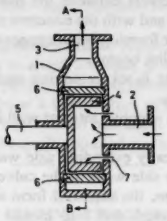
1. In the preparation of O,O-diethyl-O-(1-phenyl-2-cyano-prop-1-enyl)-thionophosphoric acid ester by reacting a benzoic acid ester with propionitrile in the presence of an alkali metal alcoholate and then reacting the reaction mixture with O,O-diethyl-thionophosphoric acid diester chloride, the improvement which comprises employing about 5 to 50 moles of the propionitrile per mole of benzoic acid ester, distilling off the alcohol obtained during the reaction of propionitrile, benzoic acid ester and alcoholate before the addition of the O,O-diethyl-thionophosphoric acid diester chloride, and maintaining the volume of the reaction mixture approximately constant by adding propionitrile during the distillation.

4,219,512
MANUFACTURE OF FIBRIDS FROM POLYMERS

Richard Sinn, Heidelberg; Otto Nagel, Neustadt; Bruno Sander, Ludwigshafen; Eckhard Bonitz, Frankenthal; Kurt Scherling, Hemsbach; Hans D. Zettler, Gruenstadt; Dieter Stoehr, Mutterstadt, and Heinz Berbner, Moerlenbach, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 5, 1977, Ser. No. 839,661
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1976, 2646332
Int. Cl.[2] B22D 23/08
U.S. Cl. 264—11 6 Claims

1. A process for the manufacture of fibrids which comprises introducing a solution of a crystalline polymer or copolymer containing a fluorine-substituted monomer at room temperature into a fluid precipitation medium under the action of shearing forces, the solvent for said polymer or copolymer being methyl ethyl ketone, tetrahydrofuran, 1,4-dioxane or dimethyl formamide and the concentration of said polymer or copolymer in said solution being in the range of 0.5 to 30% by weight, said shearing forces being generated mechanically by rotating elements to provide a mean energy density in the

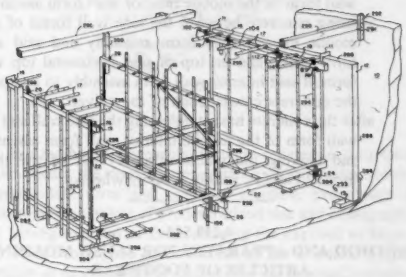


fibrid-forming zone in the field of shearing forces in the range of 20 to 80 Watt . sec/cm^3.

4,219,513
METHOD AND MEANS OF CONSTRUCTION OF CONCRETE CULVERTS

Coston B. Miller, 2403 Glenn St., Huntsville, Ala. 35801

Division of Ser. No. 814,560, Jul. 11, 1977, Pat. No. 4,142,705.
This application Nov. 27, 1978, Ser. No. 963,838
Int. Cl.[2] E01G 4/00
U.S. Cl. 264—32 1 Claim



1. The method of construction of an elongated rectangular cross section culvert comprising:

positioning and securing in place opposite vertically positioned side wall form panels, and defining by the inner sides of these panels the extreme width of the to-beconstructed culvert;

positioning at selected spaced distances along the inner side of each said wall form panel hanger assemblies, each having a holding arm, for supporting, spaced from each wall form, a horizontal re-bar holding beam;

installing horizontal re-bar holding beams along each inner side of said panels and on said arms of a said hanger assembly, each said beam being secured to a said hanger assembly;

hanging inwardly extending, with respect to said panels, U-shaped re-bars on each said beam, with the bottom run of the "U" shape being vertical and spaced from a said wall form panel, whereby end sections of the U-shaped re-bars lie in top and bottom planes in regions of the ceiling and floor of the structure to be formed of concrete;

inserting and connecting lateral beams between a bottom region of oppositely positioned hanger assemblies;

installing riser beams horizontal and parallel to, and spaced inward of, each adjacent side wall form panel, and securing riser beams to said lateral beams, said riser beams being spaced interior of the vertical portion of said re-bars;

positioning bottom re-bars from side to side near the bottom excavation, and connecting them end to end of said U-shaped re-bars;

pouring concrete on the bottom of the excavation and between side wall form panels up to a level generally corresponding to the bottom of said riser forming beam as a floor of the culvert between the outer side of said riser forming beam, and with the concrete rising on the exterior side of the riser forming beam approximately to the top of said riser forming beam;

after the concrete is set, removing said hanger assemblies and said beams;

rolling into place a mobile interior wall form assembly comprising:

a pair of vertically extending side wall forms adapted to form interior side walls of the culvert, and a horizontal top wall form, the top wall form and side wall forms being connected, and said mobile interior wall form assembly further comprising:

at least one wheel attached to each of said vertically extending side wall forms and extending below the side wall form to which it is attached by a distance which is at a maximum less than the height of the riser of the concrete at each side above the general level of the concrete as formed by said riser beams,

raising the side wall forms, generally elevating the bottom of the side edge of the side walls above the central concrete floor of the culvert, and laterally in engagement with said risers,

pressing the side wall forms against said risers,

extending reinforcement bars across and above the top wall form of the mobile interior wall form assembly,

pouring concrete between the side wall forms of said mobile interior wall form assembly and said wall form panels and on top of said horizontal top wall form of said interior wall form assembly to complete the concrete construction of the culvert, and

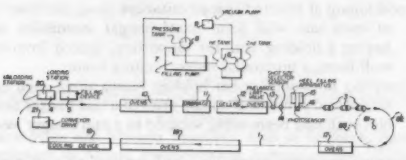
after the concrete has set, releasing the side wall and top wall form of the mobile interior wall form assembly and moving the whole assembly out of the thus-formed culvert, rolling it on its wheels.

4,219,514

METHOD AND APPARATUS FOR SLUSH MOLDING ARTICLES OF FOOTWEAR

Eric J. Hurst, Trenton, and Hugh G. MacAulay, Batawa, both of Canada, assignors to Bata Shoe Company, Inc., Belcamp, Md.

Filed Jul. 18, 1978, Ser. No. 925,842
Claims priority, application Canada, Aug. 22, 1977, 285219
Int. Cl.[2] B29D *9/00*
U.S. Cl. 264—37 **3 Claims**



1. A method of slush molding articles of footwear including heel and upper portions comprising the steps of continuously conveying a plurality of molds along a path of travel; filling each mold with a plastisol; heating said molds to cure a portion of said plastisol, thereby forming a plastisol skin on the interior of the mold; discharging excess plastisol from the mold while leaving the skin in the mold; moving a heated injection unit in synchronism with said molds from a rest position over a preselected portion of said path of travel; dispensing a preselected quantity of thermoplastic material from said injection unit into said heel cavity during such synchronous movement to fill the heel cavity; returning said injection unit to the rest position; and curing said heel portion.

4,219,515

WATER ALKALINITY CONTROL IN THE MANUFACTURE OF HYDROUS SILICATE PRODUCTS

Jerry L. Helser, Hebron, and William H. Rigby, Jr., Newark, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Sep. 21, 1978, Ser. No. 944,449
Int. Cl.[2] B28B *3/00*
U.S. Cl. 264—37 **4 Claims**

1. The process of manufacturing a hydrous calcium silicate insulating product comprising the steps of:

(a) mixing a moldable slurry comprising calcareous and siliceous materials in water;

(b) compressing and molding the resultant slurry under sufficient pressure to express water therefrom;

(c) curing the molded slurry from the step (b) to form a hydrous calcium silicate bonded product.

(d) collecting the expressed water accumulated in step (b) and contacting said water with carbon dioxide gas said carbon dioxide being introduced into said water in an amount sufficient to precipitate calcium carbonate;

(e) filtering the resultant mixture of suspended calcium carbonate and water; and

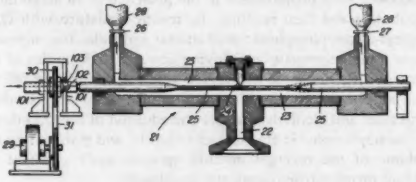
(f) returning the treated water obtained therefrom to the mixing step (a).

4,219,516

METHOD FOR CONTROLLING FLOW OF MOLTEN POLYMER TO MULTIPLE EXTRUSION DIE ORIFICES

F. John Herrington, Jr., Holcomb, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 849,050, Nov. 7, 1977, Pat. No. 4,170,450, which is a continuation-in-part of Ser. No. 753,747, Dec. 23, 1976, Pat. No. 4,081,231. This application Nov. 24, 1978, Ser. No. 963,484
Int. Cl.[2] B29F *3/06*
U.S. Cl. 264—40.7 **2 Claims**



1. A method for controlling the flow of molten polymer from a common extrusion means to multiple extrusion die orifices, said method comprising:

(a) feeding a stream of said molten polymer from said common extrusion means to a manifold by means of a first conduit connecting said manifold to said extrusion means;

(b) dividing said stream into at least two separate molten streams and passing each separate stream through a flow channel, said flow channel having in it means for increasing or decreasing the volume of said channel, said means for increasing or decreasing the volume of said flow channels comprising an annular restriction of variable length in each of said channels, whereby the lengthening of said annular restriction will decrease the volume of said flow channel and thereby increase the restriction of the flow of said molten polymer through said channel while the shortening of said annular restriction will increase the volume of said flow channel and thereby decrease the restriction of the flow of said molten polymer through said channel;

(c) extruding each of said separate streams through an extrusion die orifice positioned at the exit end of each of said flow channels; and

(d) adjusting the flow rate of said molten polymer through

each of said orifices by increasing or decreasing the volume of one or more of said flow channels.

4,219,517

PROCESS FOR SPINNING DENSE HOLLOW FIBER CELLULOSIC MEMBRANE

Robert E. Kesting, Irvine, Calif., assignor to Puropore Inc., Tustin, Calif.

Filed Oct. 12, 1978, Ser. No. 950,664
Int. Cl.[2] B05D 3/00; D02G 3/22
U.S. Cl. 264—49 6 Claims

1. A process for forming a dense hollow fiber membrane comprising the steps of:

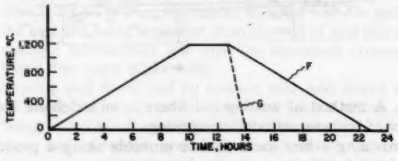
(a) spinning a thin walled hollow fiber suitable for dialysis from a solution which in turn comprises:
(i) cellulose acetate;
(ii) a solvent for said polymer;
(iii) an oligosaccharide ester.
(b) hydrolyzing the cellulose acetate to cellulose, and
(c) removing the oligosaccharide ester by leaching.

4,219,518

METHOD OF IMPROVING VARISTOR UPTURN CHARACTERISTICS

Herbert R. Philipp, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 15, 1978, Ser. No. 905,589
Int. Cl.[2] C04B 35/64
U.S. Cl. 264—66 5 Claims



1. A method for producing metal oxide varistors exhibiting improved upturn characteristics comprising:

controllably heating a pressed varistor powder mix to a temperature between approximately 900° C. and 1,500° C. for a time sufficient to form a ceramic material; and

controllably quenching said ceramic material at a rate in excess of approximately 500° C. to 3,000° C. per hour.

4,219,519

METHOD FOR AGGLOMERATING CARBONACEOUS FINES

Mehmet A. Goksel, Houghton, Mich., assignor to Board of Control of Michigan Technological University, Houghton, Mich.

Filed Mar. 8, 1979, Ser. No. 18,651
Int. Cl.[2] C04B 15/14
U.S. Cl. 264—82 11 Claims

1. A process for agglomerating carbonaceous fines having an average particle size less than about −3 mesh into hardened, high strength masses including the steps of

(a) preparing a moistened mixture including a major proportion of the carbonaceous fines, about 1 to about 15 weight % of a bonding agent selected from the group consisting of the oxides, hydroxides and carbonates of calcium and magnesium, and mixtures thereof and about 0.25 to about 10 weight % of a siliceous material containing available SiO_2 for reacting with said bonding agent to form silicate or hydrosilicate bonds therewith, the weight percentages being based upon the total weight of the dry solids in said mixture;

(b) allowing said moistened mixture to stand a time period sufficient for a substantial portion of the free internal moisture in the pores of the carbonaceous fines to migrate to the surface thereof;

(c) forming discrete, agglomerates from said moistened mixture;

(d) drying said agglomerates to reduce the free moisture content therein to about 5 weight % or less; and

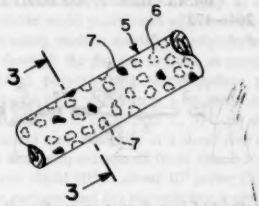
(e) hydrothermal hardening said agglomerates by contacting them with steam at a temperature of about 100° to about 250° C. for a time period sufficient to form them into hardened and integrally bonded masses.

4,219,520

METHOD OF MAKING THROMBO-RESISTANT NON-THROMBOGENIC OBJECTS FORMED FROM A UNIFORM MIXTURE OF A PARTICULATE RESIN AND COLLOIDAL GRAPHITE

William M. Kline, Gloversville, N.Y., assignor to Medical Evaluation Devices and Instruments Corp., Gloversville, N.Y.

Filed Aug. 30, 1978, Ser. No. 938,051
Int. Cl.[2] B44D 1/16; B05D 7/02, 5/04
U.S. Cl. 264—129 12 Claims



1. In a method of preparing thrombo-resistant non-thrombogenic objects, the steps of; preparing a uniform mixture of resin in particulate form and colloidal graphite; processing said mixture into an object of predetermined size and configuration and having exposed surfaces; etching the exposed surfaces of said object to expose surface areas of the colloidal graphite particles at or immediately underlying the exposed surfaces of said object; cleaning the etched object; coating the cleaned object with a cationic surface active agent; and applying a coating of Heparin over the cationic surface active agent coating.

4,219,521

METHOD OF EXTRUDED CATALYST MANUFACTURE

William M. Baumann, Downers Grove, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Nov. 30, 1978, Ser. No. 965,455
Int. Cl.[2] B01J 2/12
U.S. Cl. 264—141 8 Claims

4. A method of manufacturing an extruded catalyst which comprises the steps of:

(a) extruding a semi-solid material comprising an inorganic

oxide catalyst base and thereby forming stands of extrudate;

(b) introducing said strands of extrudate into one end of an inclined sizing drum which is revolving in a first direction and which has extrudate holding means mounted on its internal surface;

(c) lifting at least a majority of the extrudate fed to the sizing drum above the midpoint of the sizing drum in said extrudate holding means, and breaking the thus elevated extrudate into particles of smaller size by dropping the same onto a revolving impacting means located within the sizing drum and which is revolving in the opposite direction than the sizing drum; and,

(d) removing pieces of extrudate from the other end of the sizing drum.

4,219,522

METHOD OF MANUFACTURING REINFORCED PLASTIC HOSES

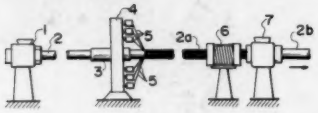
Hiroichi Oyama, Yokohama, Japan, assignor to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Dec. 19, 1978, Ser. No. 971,132

Claims priority, application Japan, Dec. 23, 1977, 52-154301

Int. Cl.[2] B29C *17/00*; B29D *23/05*

U.S. Cl. 264—173 **2 Claims**



1. A method of manufacturing reinforced plastic hoses comprising the steps of: extruding and shaping plastic material into a plastic tube having a smooth inner surface and a longitudinally serrated outer surface comprising alternating raised ridges and recessed grooves, locally heating said plastic tube to soften only the ridges of the serrated outer surface while leaving the main body of said tube in a hardened state, applying a tensioned wire reinforcing layer to the softened outer surface of the tube, and embedding said tensioned wire reinforcing layer into the ridges of said softened outer surface.

4,219,523

MELT-SPINNING ACRYLONITRILE POLYMER FIBER FROM LOW MOLECULAR WEIGHT POLYMERS

Harold Porosoff, Scarsdale, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 803,005, Jun. 3, 1977, abandoned, which is a continuation-in-part of Ser. No. 698,566, Jun. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 349,877, Apr. 10, 1973, abandoned, which is a division of Ser. No. 344,463, Mar. 23, 1973, abandoned, which is a continuation-in-part of Ser. No. 337,506, Mar. 2, 1973, abandoned, which is a continuation-in-part of Ser. No. 329,479, Feb. 5, 1973, abandoned. This application Aug. 30, 1978, Ser. No. 938,201

The portion of the term of this patent subsequent to Aug. 7, 1996, has been disclaimed.

Int. Cl.[2] D01F *6/18*

U.S. Cl. 264—206 **3 Claims**

1. A process for preparing an acrylonitrile polymer fiber of desirable physical properties which comprises providing a homogeneous fusion melt of an acrylonitrile copolymer and water at a temperature above the boiling point of water at atmospheric pressure and at a temperature and pressure sufficient to maintain water and said polymer as a homogeneous fusion melt, said polymer having a number average molecular weight in the range of about 6,000 up to about 14,750, extruding said fusion melt through a spinnerette directly into a steam-pressurized solidification zone maintained under conditions which control the rate of release of water from the nascent extrudate as it emerges from the spinnerette to avoid deformation of said extrudate and stretching said extrudate while in said solidification zone at a total stretch ratio of at least 10.

4,219,524

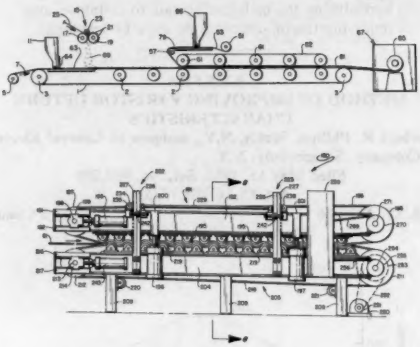
METHOD AND APPARATUS FOR PRODUCING SHEET MOLDING COMPOUND

Everett R. Miller, deceased, late of Granville, Ohio (by Vesta V. Miller, administrator), assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 907,376, May 18, 1978, abandoned, which is a continuation-in-part of Ser. No. 773,242, Mar. 1, 1977, abandoned. This application Jan. 10, 1979, Ser. No. 2,270

Int. Cl.[2] B29C *15/00*; B29D *3/02, 7/14*

U.S. Cl. 264—216 **10 Claims**



1. A method of wetting out fibers in an indefinite length layer of resinous material, comprising:

providing a first mesh surface movable along a predetermined path;

providing a second mesh surface opposite said first surface movable along said path;

compressing a layer containing resin and fibers between said first surface and said second surface along said path;

moving said first surface along said path at a first rate; and,

moving said second surface along said path at a second rate; said second rate continuously varying within a predetermined range of rates above and below said first rate.

4,219,525

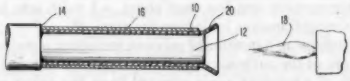
METHOD AND APPARATUS FOR CLOSING TUBES

Donald J. Greenspan, 235 Pavilion Ave., Riverside, N.J. 08075

Continuation of Ser. No. 770,786, Feb. 22, 1977, abandoned. This application Dec. 1, 1978, Ser. No. 965,511

Int. Cl.[2] B29C *27/02*

U.S. Cl. 264—296 **28 Claims**



1. A method of manufacturing a plastic tube having a bottom formed from an open-ended tube without using additional material for forming the bottom comprising the following steps:

supporting the open-ended tube on a mandrel extending longitudinally into said tube;

heating said mandrel and said tube simultaneously so as to

flare the end of the open-ended tube outwardly away from the heated mandrel;

collapsing said flared end by contact with a sleeve surrounding said open-ended tube and said mandrel and telescopically movable relative thereto;

heating said mandrel and said tubes while collapsing said flared end;

closing said collapsed, previously flared end to form said bottom by contacting said collapsed end with a mold which is substantially cooler in temperature than said mandrel and forming said bottom over the end of said mandrel;

separating said mold from said formed bottom and said mandrel; and

separating said mandrel from said tube after said mold has been separated from said bottom and said mandrel.

16. A method of manufacturing a plastic tube having a bottom formed from an open-ended tube without using additional material for forming the bottom comprising the following steps:

heating the open-ended tube so as to flare the end outwardly;

collapsing the flared end;

closing the collapsed, previously flared end to form said bottom against a heated molding surface located on the interior of the tube; and

further heating the end after flaring and before closing.

20. A method of manufacturing a plastic tube having a bottom formed from an open-ended tube without using additional material for forming the bottom comprising the following steps:

supporting the open-ended tube between a mandrel and a sleeve;

heating said mandrel, said sleeve and said tube simultaneously so as to flare the end of the open-ended tube outwardly away from the heated mandrel with the end of the mandrel being separated from the end of said sleeve a distance substantially less than the maximum cross-sectional dimension of the tube;

collapsing said flared end by contact with said sleeve surrounding said open-ended tube and said mandrel and being telescopically movable relative thereto;

closing said collapsed, previously flared end to form said bottom by contacting said collapsed end with a mold;

separating said mold from said formed bottom and said mandrel; and

separating said mandrel from said tube after said mold has been separated from said bottom and said mandrel.

4,219,526

METHOD OF BLOW-MOLDING HOLLOW SHAPED ARTICLES, INCLUDING INTERMEDIATE TEMPERING AND FINAL BIAXIAL STRETCHING STAGES

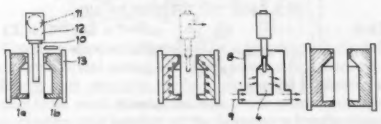
Gottfried Mehnert, Messelstrasse 25, 1000 Berlin 33, Fed. Rep. of Germany

Continuation of Ser. No. 740,851, Nov. 11, 1976, abandoned. This application Jul. 3, 1978, Ser. No. 921,258

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1975, 2550727

Int. Cl.[2] B29C *17/07*

U.S. Cl. 264—520 **16 Claims**



1. A method of converting plasticized synthetic plastic parisons into hollow shaped articles by blow-molding, comprising the sequential steps of forming a parison in an extrusion machine at a first station; pneumatically converting said parison at a second station into a hollow blank; transferring said hollow blank to an intermediate station; subjecting said hollow blank at said intermediate station to a first tempering operation by confining the blank within and in contact with a cooled open-and-shut tempering mold; thereupon subjecting said hollow blank at said intermediate station to at least one discrete second tempering operation by confining the blank in a tempering chamber, and blowing a stream of tempering air through said tempering chamber for contact with said blank, and only thereafter pneumatically further converting the tempered blank into a shaped article.

4,219,527

EXTRUSION GRADE POLYETHYLENE TEREPHTHALATE

Robert Edelman, Staten Island, N.Y.; Frank M. Berardinelli, Millington, and Kurt F. Wissbrun, Short Hills, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 894,674, Apr. 10, 1978. This application Oct. 31, 1978, Ser. No. 956,532

Int. Cl.[2] B29C *17/07*

U.S. Cl. 264—540 **3 Claims**

1. A process for blow molding a modified polyethylene terephthalate polymer into containers on a blow molding machine comprising an extruder having a die gap at one end thereof and an openable mold positioned adjacent the die gap comprising: (a) extruding molten modified polyethylene terephthalate polymer through the die gap to form an unsupported parison, the modified polyethylene terephthalate polymer having a zero shear rate melt viscosity at a temperature in the range of from about 265° C. to about 300° C. of from about 10^5 to about 10^6 poise and a melt viscosity at a shear rate of about 10^3 seconds^{-1} and at a temperature of from about 265° C. to about 300° C. of from about 10^3 to about 10^4 poise; (b) closing the mold about the parison; and (c) introducing a gas into the parison to cause it to expand and conform with the shape of the internal mold surface.

4,219,528

APPARATUS FOR GENERATING A REDUCING ATMOSPHERE FOR HEAT-TREATING INSTALLATIONS

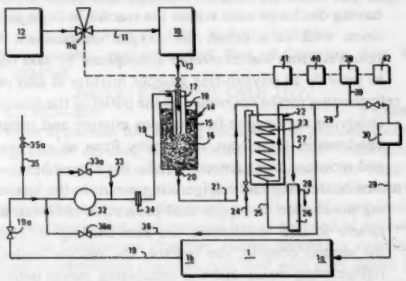
Alfred Normand, Paris, France, assignor to Societe Chimique de la Grande Paroisse, Azote et Produits Chimiques, Paris, France

Division of Ser. No. 667,983, Mar. 18, 1976, Pat. No. 4,069,071. This application Jul. 6, 1977, Ser. No. 813,236

Claims priority, application France, Apr. 11, 1975, 75 11350

Int. Cl.[2] B01J *7/02*

U.S. Cl. 422—62 **8 Claims**



1. A generator for generating a protective reducing atmosphere which is formed at least partly by nitrogen and hydrogen and which is intended to be fed into a heat-treating installation, comprising, in combination

(a) cracking means provided with a supply duct connected

to a source of ammonia under pressure for cracking ammonia to produce nitrogen and hydrogen therefrom, said cracking means having an outlet duct to supply said nitrogen and hydrogen;

(b) a recovery pipe connected to an outlet of said installation for recovering an oxygen-contaminated atmosphere which has passed through said installation;

(c) reactor means containing a catalyst having a de-oxidizing effect and including inlet means connected to said outlet duct of said cracking means for receiving an oxygen-free mixture of nitrogen and hydrogen therefrom and to said recovery pipe for recovering the oxygen-contaminated atmosphere from said installation and for removing the oxygen contaminant from said recovered atmosphere, said catalyst operating without the addition of substantial ambient air into said reactor means, said reactor means having an outlet for supplying an oxygen-free gaseous mixture;

(d) refrigerating means connected to the outlet of said reactor means for removing condensates from said oxygen-free gaseous mixture to supply an oxygen-free and moisture-free gaseous mixture;

(e) a supply pipe for connecting said refrigerating means to an inlet of said installation; and

(f) means for force-circulating said protective reducing atmosphere in a closed loop through said reactor means, said refrigerating means and the installation.

7. A generator for producing a protective reducing atmosphere from ammonia and from an oxygen-contaminated atmosphere obtained from a heat-treating installation, the generator comprising, in combination:

means containing a supply of ammonia under pressure;

cracking means connected to the supply for cracking ammonia to produce nitrogen and hydrogen therefrom;

a reactor containing a catalyst for catalytic deoxidation at a temperature less than 200° C., the reactor having an outlet;

a first conduit interconnecting the cracking means and the reactor for supplying nitrogen and hydrogen to said reactor;

a second conduit separate from said first conduit for interconnecting the heat-treating installation and the reactor, the second conduit recovering oxygen-contaminated atmosphere from the installation and introducing the same into the reactor in a stream separate from the incoming nitrogen and hydrogen, said first and second conduits having discharge ends within the reactor in close juxtaposition with each other, the oxygen contaminant being removed from the recovered atmosphere by said reactor to provide an oxygen-free gaseous mixture at said outlet;

refrigerating means connected to the outlet of the reactor for receiving the oxygen-free gaseous mixture and removing condensates therefrom, to thereby form an oxygen-free and moisture-free protective reducing atmosphere;

means connecting said refrigerating means to the heat-treating installation to supply said protective reducing atmosphere to said installation, the heat-treating installation, the second conduit, the reactor, the reactor outlet, the refrigerating means and the connecting means defining a closed loop path for the protective reducing atmosphere; and

means automatically responsive to the hydrogen content of said protective reducing atmosphere in the connecting means for controlling the flow of ammonia from said supply to said cracking means.

4,219,529

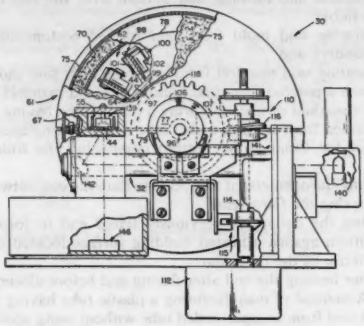
INCUBATOR FOR CHEMICAL ANALYZER

Glenn E. Tersteeg, Honeoye Falls; Louis C. Nosco, Rochester; Robert J. Meyer, Spencerport, and Rodney J. Whitcomb, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 751,911, Dec. 17, 1976, abandoned. This application Nov. 28, 1977, Ser. No. 855,124

Int. Cl.[2] G01N *33/16, 1/14*

U.S. Cl. 422—65 **14 Claims**



1. An incubator for use in a chemical analyzer in which a fluid sample is metered onto a slide which is analyzed after an appropriate period of incubation, said incubator comprising:

means which defines a temperature controlled chamber, said chamber having a first location wherein slides are transferred into the chamber and a second location wherein slides are transferred out of the chamber;

rotor means in said chamber, said rotor means including a plurality of radially-extending slide holding means for releasably holding the slides in the rotor means; and

drive means for said rotor means, said drive means being adapted to effect movement of slides in the rotor means within said chamber, and said drive means being further adapted to stop said rotor means in a position such that slides can be transferred at either of said locations.

4,219,530

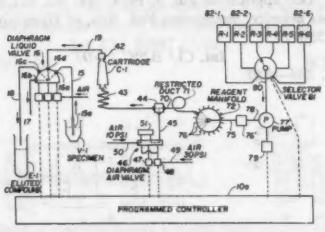
APPARATUS FOR ANALYZING BIOLOGICAL SPECIMENS

Reiner H. Kopp, Centerport, and John Schmermund, Syosset, both of N.Y., assignors to Brinkmann Instruments, Inc., Westbury, N.Y.

Filed Jan. 27, 1978, Ser. No. 872,824

Int. Cl.[2] G01N *33/16, 31/06*

U.S. Cl. 422—69 **19 Claims**



1. Apparatus for simultaneously extracting compounds from a plurality of specimens comprising

(a) means defining a plurality of test channels each accommodating a charge of liquid permeable adsorptive material,

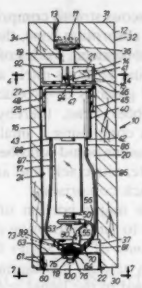
(b) means to draw individual samples from a plurality of liquified test specimens respectively into the channels,
(c) means to effect at least one pass of each sample through the charge of adsorptive material in the associated channel,
(d) a liquified solvent reagent source including means to divide the reagent into a plurality of substantially equal predetermined volumes for passage through the respective charges of exposed adsorptive material to extract the accumulated compound therefrom, and
(e) means to collect respective volumes of exposed reagent.

4,219,531

SMOKE DIFFUSING DEVICE

Gerald A. Wisniewski, 2050 N. 86th St., Wauwatosa, Wis. 53226

Filed Nov. 20, 1978, Ser. No. 961,953
Int. Cl.[2] A61L *9/02*; F04B *49/00*
U.S. Cl. 422—124 **7 Claims**



1. A smoke diffusing device for distributing aromatic smoke from burning material, such as tobacco, incense, or the like, throughout a room comprising:
a housing having a receptacle thereon for holding burning material;
a main chamber in said housing;
a fan chamber within said housing into which the smoke is drawn from said receptacle through an inlet passage in said housing and from which it is forcibly expelled to atmosphere through an outlet passage in said housing;
a fan located in said fan chamber;
a fan motor, battery, switch, and electric wiring removably located in said main chamber in said housing;
a removable cap for closing said main chamber;
and an adapter removably mounted on said motor and engageable with the walls of said main chamber to seal said fan chamber from said main chamber and to support said motor in said main chamber.

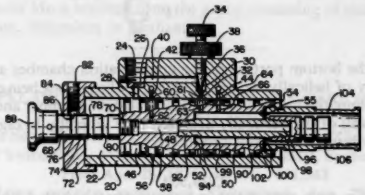
4,219,532

FOAMING DEVICE

Clifford H. Messervey, East Randolph, and Peter R. Martin, Frewsburg, both of N.Y., assignors to Borden, Inc., Columbus, Ohio

Filed Oct. 10, 1978, Ser. No. 949,685
Int. Cl.[2] B01F *3/12*; B01J *8/00*
U.S. Cl. 422—133 **6 Claims**

1. Foaming apparatus comprising a housing; means defining an axial cylindrical passage in the housing; a first, second, third and fourth port means in the housing spaced a predetermined distance from each other which provide communication between exterior and interior of the housing; a longitudinal fluid passage means in the wall of the housing bringing into communication the first and third housing port means; a cylindrical spool slidably disposed in the housing; a smaller axial upstream passage means in the spool blocked off at the upstream end; a larger axial downstream passage means in the spool adjoining the upstream spool passage means and forming a shoulder therewith; a first, second and third circumferential spool port means provided on the exterior surface of the spool in a predetermined spaced relationship to each other and to the housing port means; plurality of radial spool channel means connecting each circumferential spool port means with the spool passage means, the first circumferential spool port means being in communication with the upstream spool passage means whereas the second and third circumferential spool port means are in communication with the downstream spool passage means; a tubular spool extension secured to the downstream end of the spool; a tubular element disposed axially within the downstream passage means and secured into the downstream end of the upstream spool passage means providing flow from the upstream spool passage means through the tubular element and being of a smaller diameter than the downstream spool



passage means thus creating a mixing chamber therebetween; a spray nozzle secured to the downstream end of the tubular element terminating within the spool extension in spaced relationship thereto to provide space at the downstream end of the spool extension where fluids from the upstream and downstream spool passage means mix; and means for displacing the spool to an operating position whrein the first housing port means is blocked by the spool with the second and third housing port means being in communication with the first and second circumferential spool port means respectively, to an off position wherein all the housing port means are blocked by the spool, and to a clean position wherein second and fourth housing port means are blocked by the spool and first and third housing port means are in communication with first and third circumferential spool port means.

4,219,533

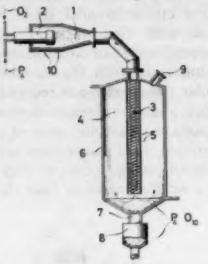
APPARATUS FOR THE PRODUCTION OF HEXAGONAL PHOSPHORUS PENTOXIDE

Gerhard Hartlapp, Hürth-Hermülheim; Werner Kowalski, Weilerswist-Metternich; Robert Queck, Hürth-Burbach, and Theo Dahmen, Brühl, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 11, 1978, Ser. No. 932,804
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1977, 2736765
Int. Cl.[3] F28D *7/02*; C01B *25/12*
U.S. Cl. 422—200 **3 Claims**

1. In an apparatus for making phosphorous pentoxide comprising means defining a horizontally disposed combustion chamber, a two component combustion nozzle for feeding elementary phosphorous and oxygen to the combustion chamber and outlet means for discharging products of combustion, the nozzle means and outlet means being disposed at opposite ends of the combustion chamber, means defining a vertically oriented condensation chamber provided with inlet means for receiving products of combustion from the combustion chamber, off-gas outlet means at the upper end of the condensation chamber and being adjacent to the inlet means, the condensation chamber further having means for cooling the walls thereof, outlet means with locking means therein for discharging condensed hexagonal phosphorous pentoxide and receiver means for receiving the discharged phosphorous pentoxide,

wherein the improvements comprise a vertically disposed tube being located within the condensation chamber with one end thereof connected to and communicating with the inlet means for the condensation chamber and the other end terminating



above the bottom portion of the condensation chamber and a plurality of helically wound bundled cooling pipes being disposed along the inside wall of the combustion chamber and the inside wall of the vertically disposed tube whereby hexagonal phosphorous pentoxide is produced.

4,219,534

METHOD FOR REMOVING NITROGEN OXIDES FROM A GAS STREAM

Donald Ethington, Dimmitt, Tex., assignor to Goodpasture, Inc., Brownfield, Tex.

Continuation-in-part of Ser. No. 638,043, Dec. 5, 1975, Pat. No. 4,151,265, which is a continuation-in-part of Ser. No. 533,196, Dec. 16, 1974, abandoned, which is a continuation-in-part of Ser. No. 455,568, Mar. 28, 1974, abandoned. This application Mar. 15, 1979, Ser. No. 21,167

The portion of the term of this patent subsequent to May 2, 1995, has been disclaimed

Int. Cl.[2] **C01C** *1/18*

U.S. Cl. 423—235 **14 Claims**

1. A method for treating a gas stream containing nitrogen oxides to produce a product gas stream of reduced nitrogen oxides content which comprises counter-currently contacting the gas stream with a sequence of reaction liquids comprising:

(a) an acidic aqueous solution of ammonium nitrate at a pH of about 0.01 to about 0.5;

(b) thereafter an ammoniacal aqueous solution of ammonium nitrate at a pH of about 8.1 to about 8.5; and

(c) thereafter, water.

4,219,535

ALKALI METAL ALUMINOSILICATE DETERGENT BUILDER

Yujiro Sugahara, Tokyo; Koichi Usui, Shibata; Masahide Ogawa, Nakajo; Hideaki Kurosaki, Shibata, and Shigehisa Imafuku, Nakajo, all of Japan, assignors to Mizusawa Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 741,365, Nov. 12, 1976, Pat. No. 4,102,977. This application Jan. 26, 1978, Ser. No. 872,587

Claims priority, application Japan, Nov. 18, 1975, 50-137814; Nov. 27, 1975, 50-141141; Oct. 13, 1976, 51-121795

Int. Cl.[2] **C01B** *33/28;* **C11D** *9/18*

U.S. Cl. 423—328 **14 Claims**

1. A detergent builder consisting essentially of an inorganic fine powder obtained by reacting an acid-treated smectite clay with alumina, alkali metal components and water, said powder composed mainly of an alkali metal aluminosilicate having an X-ray diffraction pattern substantially the same as that of zeolite of the type A and having a degree of crystallization in the range of from 55 to 75%, wherein said inorganic fine powder has the following properties: a maximum primary particle size smaller than 1μ, a secondary particle size smaller than 4μ, a buffer capacity (S) of at least 132 ml/100 g of solids, said buffer capacity being expressed by an amount of hydrochloric acid necessary for lowering the pH of a 1% aqueous dispersion of said inorganic fine powder from 9.0 to 6.75 when said dispersion is titrated with 0.4 N hydrochloric acid at a rate of 20 to 50 ml/hr, a calcium ion binding property (C.I.) of at least 70 mg/g as expressed as CaO and an interfacial electric characteristic such that when it is dispersed in water after exchange of calcium ion, the surface potential is retained uniformly negative.

4,219,536

NITRIC ACID PROCESS AND DISPOSAL OF WASTE LIQUIDS CONTAINING AMMONIUM NITRITES

Karl A. Hoenke, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jul. 26, 1978, Ser. No. 928,139

Int. Cl.[2] **C01B** *21/40;* **C01C** *1/18*

U.S. Cl. 423—393 **12 Claims**

1. In the process for preparing nitric acid which comprises the steps of:

(a) contacting a gaseous stream comprising nitrogen dioxide with water in an absorption zone, thereby yielding a gaseous by-product comprising oxides of nitrogen and a liquid product comprising aqueous nitric acid; and

(b) contacting said gaseous by-product with ammonia and water in a scrubber zone, thereby yielding a gaseous scrubber effluent comprising a small amount of nitrogen oxides and an aqueous liquid scrubber product comprising ammonium nitrate, nitric acid and ammonium nitrite;

the improvement which comprises:

feeding at least the major portion of said aqueous liquid scrubber product to said absorption zone and substantially reducing the amount of new water fed to said absorption zone by about an amount substantially corresponding to the water contained in the liquid scrubber product fed to said absorption zone thereby substantially reducing the total amount of water required by said nitric acid process and innocuously transforming the ammonium nitrite fed to said absorption zone to ammonium nitrate, nitrogen and water.

4,219,537

DESULFURIZATION AND LOW TEMPERATURE REGENERATION OF CARBONACEOUS ADSORBENT

Peter Steiner, Edison, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Oct. 31, 1978, Ser. No. 956,458

Int. Cl.[2] **C01B** *17/02, 17/00;* **B01J** *8/00*

U.S. Cl. 423—569 **15 Claims**

1. A process for desulfurizing a flue gas with a carbonaceous adsorbent and reactivating the spent carbonaceous adsorbent, comprising:

(1) using a partially oxidized coal as the carbonaceous adsorbent and continuously passing the spent adsorbent through a regeneration zone as a non-static bed;

(2) passing an initial charge of an inert gas into a regenerating gas loop and through the regeneration zone in a direction countercurrent to the flow of the spent adsorbent for contact with the spent adsorbent to desorb adsorbed volatiles including sulfur oxides and water vapor from the spent adsorbent;

(3) maintaining the temperature of the regeneration zone at the gas inlet within the range of 800°–1000° F. by externally heating and recycling the desorbed volatiles through the regeneration zone whereby a water vapor concentration of at least 40 mole percent and an SO_2 concentration of at least 15 mole % in the regeneration gas loop are maintained and whereby the spent adsorbent is continuously regenerated;

(4) continuously removing a portion of the gas from the regenerating gas loop at the rate at which volatiles are desorbed to maintain steady-state operation; and

(5) processing the gas removed from the regenerating gas loop to recover the sulfur value contained therein.

4,219,538

RADIOIODINATION PROCESS

Leslie M. Sprinkle, St. Louis, Mo., assignor to Mallinckrodt, Inc., St. Louis, Mo.

Filed Feb. 6, 1978, Ser. No. 875,256
Int. Cl.[2] A61K *43/00*
U.S. Cl. 424—1 5 Claims

1. In a process for radioiodinating TSH under radioiodinating conditions to a radioactivity of 40 to 100 microcuries per micrograms suitable for use in RIA procedures utilizing chloramine-T wherein the immunoreactivity of said TSH degrades during the radioiodination reaction or aging thereafter, the improvement comprising additionally including during the radioiodination reaction to reduce said degradation a protecting amount of a protective agent represented by the formula

wherein each R is lower alkyl, phenyl, benzyl or tolyl.

4,219,539

IMMUNOCHEMICAL DIAGNOSTIC METHOD FOR GASTRIC CANCER

Emmanuel Deutsch, 469 Beacon St., Boston, Mass. 02115

Filed Feb. 24, 1978, Ser. No. 881,137
Int. Cl.[3] G01N *33/50, 33/48, 27/26, 21/82*
U.S. Cl. 424—8 1 Claim

1. A diagnostic method for distinguishing normal gastric juice from cancerous gastric juice in a human patient comprising:

collecting first a fasting gastric juice sample from a patient through a tube, discarding said fasting sample and then collecting a gastric juice sample to which alkali is added intragastrically to inactivate pepsin by raising the pH above 7;

dialyzing the subsequent sample against 0.005 molar tris buffer to remove interfering substances;

liophilizing the dialyzed material;

solubilizing the lyophilate in a small amount of barbital buffer in a ratio of about ten milligrams per ½ milligram of buffer to provide a test sample;

testing the sample against anti-IgG and anti-Fc in the wells of a Ouchterlony plate by reacting in a moist chamber until a precipitin line appears, eluting unreacted material, drying the plate, staining with amido black and destaining with solvent, further testing the sample by double loading against anti-IgG and anti-Fc in the wells of an immunoelectrophoresis plate, the same buffered with barbital at pH 8.6 and electrophoresed at 100 volts for 35 minutes and diffused for 2 days in a moist chamber, eluting unreacted material, drying said plate, staining with amido black and destaining;

a double precipitin line on the Ouchterlony plate indicating a positive cancer with anti-IgG and anti-Fc in the first immunodiffusion;

the anodic displacement of the anti-IgG and anti-Fc precipitin line on the electrophoresis plate indicating a cancer positive diagnosis; and

the sinuous characteristic of the precipitin line in the immunoelectrophoresis plate indicating a complex formation associated with a cancer positive diagnosis.

4,219,540

METHOD FOR INHIBITING PERSPIRATION

Gianluigi Soldati, 486 Flock Rd., Mercerville, N.J. 086109; James W. Stitley, 43 Brooktree Rd., Heightstown, N.J. 08520; Ronald J. Wulf, 207 Varsity Ave., and Herman E. Jass, 77 Poe Rd., both of Princeton, N.J. 08540

Filed Dec. 1, 1977, Ser. No. 856,510
Int. Cl.[2] A61K *7/32, 7/38;* C07F *5/06*
U.S. Cl. 424—65 1 Claim

1. A method for inhibiting the flow of perspiration from the human body which comprises topically applying to the skin a perspiration inhibiting amount of a compound having the formula:

$$Me(CF_3SO_3)_3$$

wherein Me is selected from the group consisting of aluminum, cerium, didymium or lanthanum.

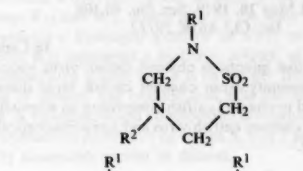
4,219,541

NOVEL ORAL COMPOSITION FOR THE CARE OF THE MOUTH AND TEETH

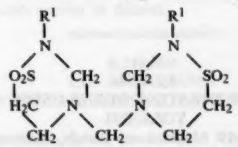
Hans Schmid, Muttenz, and Hans R. Mühlemann, Zürich, both of Switzerland, assignors to GABA AG, Basel, Switzerland

Filed Apr. 28, 1976, Ser. No. 681,343
Claims priority, application Switzerland, Apr. 28, 1975, 5386/75
Int. Cl.[2] A61K *7/22, 31/54*
U.S. Cl. 424—54 8 Claims

1. A method of preventing plaque formation, paradentosis or caries which comprises applying to the mouth and teeth a composition containing an effective amount of the compound of the formula

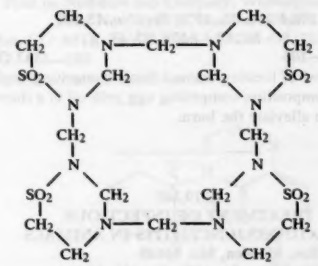


(I);



(II);

or



(III)

in which R^1 and R^2 in formulas I and II, may be the same or different and are selected from the group consisting of methyl, ethyl, chloroethyl, hydroxyethyl, aminoethyl, carbethoxymethyl, n-propyl, isopropyl, n-butyl, isobutyl, 1-methylpropyl, t-butyl, hexyl, cyclohexyl, methycyclohexyl, benzyl, phenyl, chlorophenyl, methoxyphenyl, chloronitrophenyl or dimethylnitrophenyl and wherein the balance of the composition is at least one additive used in compositions for the care of

the mouth selected from the group consisting of abrasives, binders, softeners, humectants, anionic, cationic or nonionic detergents, aroma agents and carriers.

4,219,542

SEX ATTRACTANT FOR TOBACCO MOTHS

Jerome A. Klun, Potomac; Jack R. Plimmer, Columbia; Barbara A. Bierl-Leonhardt, Potomac, all of Md. and Alton N. Sparks, Tifton, Ga., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Mar. 29, 1979, Ser. No. 25,135
Int. Cl.[2] A01N *17/14*
U.S. Cl. 424—84 **3 Claims**

1. An attractant for the adult male tobacco budworm comprising an effective attractant amount of an effective combination of (Z)-11-hexadecenal, (Z)-9-tetradecenal, (Z)-9-hexadecenal (Z)-7-hexadecenal, (Z)-11-hexdecen-1-ol, tetradecanal, and hexadecanal, said components being at least 99.0% pure and combined at ratios of about 11.5:6.9; 4.5; 2.6; 9.0; 2.25; and 11.0, on a weight basis, and an effective antioxidant amount of 2,6-di-tert-butyl-4-methyl phenol.

4,219,543

CHANNEL CATFISH VIRUS DISEASE VACCINE AND METHOD OF PREPARATION THEREOF AND METHOD OF IMMUNIZATION THEREWITH

James X. Hartmann, Boca Raton, and Edward J. Noga, Lake Worth, both of Fla., assignors to Florida Atlantic University, Boca Raton, Fla.

Filed May 18, 1979, Ser. No. 40,108
Int. Cl.[2] A61K *39/12*
U.S. Cl. 424—89 **16 Claims**

1. A modified, live infectious channel catfish virus vaccine which imparts immunity from channel catfish virus disease when administered to channel catfish comprising an attenuated strain or strains of channel catfish virus and a pharmaceutically acceptable diluent.

4,219,544

METHOD FOR TREATING BURNS USING AN EGG YOLK OIL

Carol J. Burg, B-10 Moorestown Woods, Moorestown, N.J. 08057

Filed Feb. 26, 1979, Ser. No. 15,298
Int. Cl.[2] A61K *35/48*
U.S. Cl. 424—105 **13 Claims**

1. A method of treating burned tissue comprising topically applying a composition comprising egg yolk oil in a therapeutic amount to alleviate the burn.

4,219,545

TREATMENT OF INFECTIOUS KERATOCONJUNCTIVITIS IN ANIMALS

Calvin E. Collins, Mendon, Mo. 64660

Filed Mar. 23, 1979, Ser. No. 23,304
Int. Cl.[2] A61K *31/65, 31/71, 31/525*
U.S. Cl. 424—181 **7 Claims**

1. A method for treatment of cattle having keratoconjunctivitis comprising:

(a) orally administering to each of said cattle a composition comprising riboflavin and an edible carrier, wherein the dosage of said riboflavin is greater than about 65 milligrams per 24 hour period.

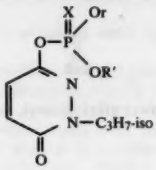
4,219,546

COMBATING ARTHROPODS WITH O,O-DIALKYL-O-[1-ISOPROPYL-1,6-DIHYDRO-6-OXO-PYRIDAZIN-3-YL]-PHOSPHORIC ACID ESTERS

Fritz Maurer, Wuppertal, and Ingeborg Hammann, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 29, 1978, Ser. No. 920,506
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1977, 2732101
Int. Cl.[2] C07F *9/65*; A01N *9/36*
U.S. Cl. 424—200 **10 Claims**

1. An O,O-dialkyl-O-[1-isopropyl-1,6-dihydro-6-oxo-pyridazin-3-yl]-phosphoric acid ester of the formula



wherein

R and R′ each independently is alkyl with 1 to 8 carbon atoms, and

X is oxygen or sulphur.

9. A method of combating insects and acarids which comprises applying to the insects and acarids, or to a habitat thereof, an insecticidaely or acaricidaely effective amount of an ester according to claim 1.

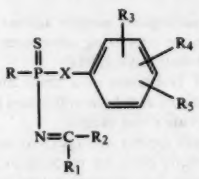
4,219,547

PHOSPHOROIMIDOPHENYL INSECTICIDES

Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 635,556, Nov. 22, 1975, abandoned. This application Mar. 18, 1976, Ser. No. 668,341
Int. Cl.[2] A01N *9/36*; C07F *9/24, 9/44*
U.S. Cl. 424—212 **42 Claims**

1. A compound having the formula



wherein

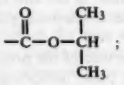
X is oxygen or sulfur;

R is alkyl or alkoxy having from one to four carbon atoms, inclusive;

R_1 is hydrogen or alkyl having from one to four carbon atoms, inclusive;

R_2 is alkoxy having from one to four carbon atoms, inclusive;

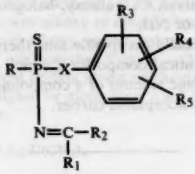
R_3 is selected from the group consisting of methoxy, SCH_3, NO_2, and



R_4 is selected from the group consisting of hydrogen, chlorine, and methyl; and

R_5 is hydrogen or chlorine.

27. A method of controlling insects comprising applying to the habitat thereof an insecticidally effective amount of a compound having the formula



wherein

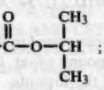
X is oxygen or sulfur;

R is alkyl or alkoxy, having from one to four carbon atoms, inclusive;

R_1 is hydrogen or alkyl having from one to four carbon atoms, inclusive;

R_2 is alkoxy having from one to four carbon atoms inclusive;

R_3 is selected from the group consisting of methoxy, SCH_3, NO_2, and



R_4 is selected from the group consisting of hydrogen, chlorine, and methyl; and

R_5 is hydrogen or chlorine;

and an inert diluent carrier.

4,219,548

TOPICAL ANTI-INFLAMMATORY COMPOSITION

Herbert H. Reller, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 777,192, Mar. 14, 1977, Pat. No. 4,126,681, which is a continuation of Ser. No. 638,773, Dec. 8, 1975, abandoned, which is a continuation-in-part of Ser. No. 566,506, Apr. 9, 1975, abandoned. This application Sep. 1, 1978, Ser. No. 938,992

The portion of the term of this patent subsequent to Nov. 21, 1995, has been disclaimed.

Int. Cl.[2] A61K *31/61*

U.S. Cl. 424—234 **3 Claims**

1. A solution for use as a vehicle for the topical administration of an anti-inflammatory amount of acetylsalicylic acid, comprising:

(a) from about 0.5% to about 10% by weight of monoolein;

(b) from about 35% to about 50% by weight of a diol having 3 or 4 carbon atoms; and

(c) from about 35% to about 50% by weight of an alcohol having 2 or 3 carbon atoms.

4,219,549

AMINO-3 CARDENOLIDES, PROCESS FOR PREPARATION, AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

Francois X. Jarreau, Versailles, and Jean J. Koenig, Chilly-Mazarin, both of France, assignors to Etablissements Nativelle S.A., Paris, France

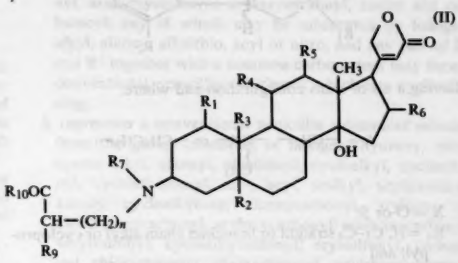
Filed Jan. 26, 1979, Ser. No. 6,709

Claims priority, application France, Jan. 27, 1978, 78 02391

Int. Cl.[2] C07J *19/00*

U.S. Cl. 424—241 **14 Claims**

5. Alkylamino-3 cardenolide derivatives represented by general formula (II):



wherein R_1, R_2, R_4, R_5, and R_6, which may be the same or different, each represents a hydrogen atom or a hydroxy, alkoxy or acyloxy group; R_3 represents a lower alkyl, hydroxyalkyl, acyloxyalkyl, haloalkyl or ethylenedioxyalkyl group; R_7 represents a hydrogen atom, or an acyl or alkyl group; R_9 represents a hydrogen atom, an alkyl group or an $—NR_{11}R_{12}$ group; R_{11} and R_{12}, which may be the same or different, each represents a hydrogen atom or an alkyl or aryloxycarbonyl group; R_{10} represents a hydroxy, alkoxy, aryloxy or aralcoxycarbonyloxy group; and n is an integer from 0 to 6; and the base or mineral and organic acid salts thereof.

8. A pharmaceutical composition comprising an alkylamino-3 cardenolide derivative of claims 5, 6 or 7 and a pharmaceutically acceptable carrier or diluent.

4,219,550

CIS- AND TRANS-OCTAHYDROPYRIDOPYRROLOBENZHETEROCYCLES

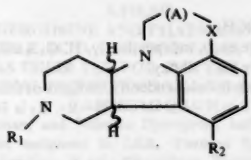
Parthasarathi Rajagopalan, Graden City, N.Y., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 9, 1978, Ser. No. 959,064

Int. Cl.[2] A61K *31/535, 31/54;* C07D *498/12, 513/12*

U.S. Cl. 424—246 **42 Claims**

1. A compound of the formula:



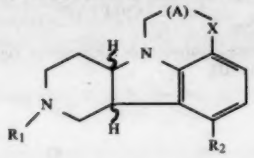
having a cis or trans configuration and where:

$$A = —CH_2—, —\underset{\displaystyle CH_3}{\overset{\displaystyle |}{CH}}—, \text{ or } —CH_2CH_2—;$$

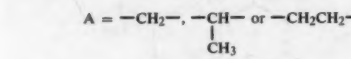
X=O or S;

R_1=H, C_1–C_4 straight or branched chain alkyl or cyclopropyl; and
R_2=H, CH_3, OCH_3, Cl, Br, F or CF_3;
or pharmaceutically suitable salts thereof.

29. A method of combatting depression in a warm-blooded animal which comprises administering to the animal an effective antidepressant amount of a compound of formula



having a cis or trans configuration and where:



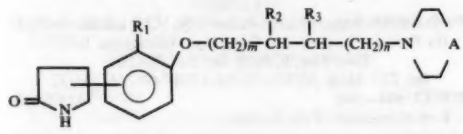
X =O or S;
R_1 =H, C_1–C_4 straight or branched chain alkyl or cyclopropyl; and
R_2 =H, CH_3, OCH_3, Cl, Br, F or CF_3; or pharmaceutically suitable acid salts thereof.

4,219,551
AMINOALKOXYPHENYLPYRROLIDONE ANTIHYPERTONIC AGENTS AND USE THEREOF

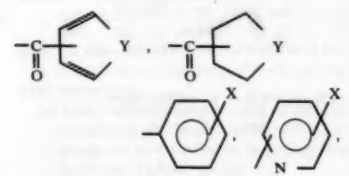
Dieter Seidelmann; Ralph Schmiechen; Gert Paschelke, and Bernd Müller, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Aug. 1, 1979, Ser. No. 62,865
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1978, 2834114
Int. Cl.[2] **C07D** *413/12, 401/12;* **A61K** *31/535, 31/445*
U.S. Cl. 424—248.54 **27 Claims**

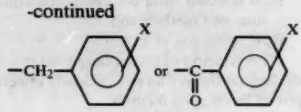
1. An aminoalkoxyphenylpyrrolidone of the formula



wherein
R_1 is H or OCH_3;
R_2 and R_3 are each, independently, H, C_{1-4} alkyl, OH, C_{1-6} acyloxy, or C_{1-3} alkoxy;
m and n are each, independently, integers of from 0 to 3; and
A is >O, >S >N—R_5, or >CH—R_5; R_5 is H,



-continued



X is H, C_{1-4} alkyl, C_{1-4} alkoxy, halogen, CF_3, or OCF_3; and Y is O, S or NH;
and pharmaceutically acceptable salts thereof.

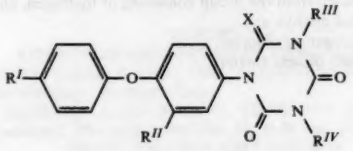
26. A pharmaceutical composition which comprises an effective antihypertonic amount of a compound of claim **1**, and a pharmaceutically acceptable carrier.

4,219,552
1-(4-PHENOXY-PHENYL)-1,3,5-TRIAZINES, THEIR USE AS GROWTH PROMOTERS

Axel Haberkorn; Martin Scheer, both of Wuppertal, and Jürgen Stoltefuss, Haan, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 843,627, Oct. 19, 1977, abandoned.
This application Mar. 12, 1979, Ser. No. 19,549
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1977, 2718799
Int. Cl.[2] **C07D** *251/34;* **A61K** *31/53*
U.S. Cl. 424—249 **3 Claims**

1. A medicament, characterized in that it contains a growth-promoting effective amount of at least one 1-(4-phenoxy-phenyl)-1,3,5-triazine of the formula



(Ia)

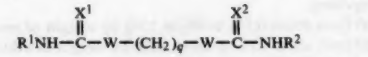
in which
R^I represents perfluoroalkyl (C_1–C_4) thio, halogenoalkyl (C_{1-C4}) sulphinyl or halogenoalkyl (C_{1-C4}) sulphonyl,
R^{II} represents alkyl (C_1 –C_4) or halogen, and
R^{III} and R^{IV} are identical or different and represent hydrogen or alkyl (C_1 –C_4), X represents an oxygen atom or a sulphur atom, and its physiologically acceptable salts.

4,219,553
ALKOXY PYRIDYL SUBSTITUTED ALKANES

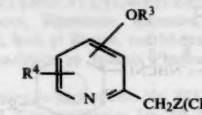
Graham J. Durant; Charon R. Ganellin, both of Welwyn Garden City, and George S. Sach, Welwyn, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Division of Ser. No. 816,420, Jul. 18, 1977, Pat. No. 4,139,624.
This application Oct. 4, 1978, Ser. No. 948,616
Int. Cl.[2] **C07D** *239/24*
U.S. Cl. 424—250 **5 Claims**

1. A compound of the formula



wherein X^1 and X^2 are each sulphur; R′ is a grouping of the structure



wherein R^3 is lower alkyl or $—(CH_2)_pA$ where p is 2 to 4, and A is hydroxy, lower alkoxy or dimethylamino; R^4 is hydrogen, lower alkyl, lower alkoxy, amino, halogen, or methylamino; or $—OR^3$ and R^4 can together form a $—O(CH_2)_bO—$group attached to adjacent carbon atoms on the pyridine ring; where b is 1 to 4; Z is sulphur or methylene; n is 2 or 3; R^2 is a grouping of the structure:

$$Het—(CH_2)_{m'}Z'(CH_2)_{n'}—$$

wherein Het is pyrimidine, pyrazine or pyridazine which is optionally substituted by lower alkyl, hydroxy, halogen or amino; Z' is sulphur or methylene; m' is 0, 1 or 2; n' is 2 or 3 and the sum of m' and n' is 3, 4; W is NH; and q is an integer from 2 to 8 or a pharmaceutically acceptable acid addition salt thereof.

4. A pharmaceutical composition to inhibit H-2 histamine receptors comprising, in an effective amount to inhibit said receptors, a compound according to claim 1 in combination with a pharmaceutically acceptable carrier.

4,219,554

NOVEL PENICILLINS AND CEPHALOSPORINS AND PROCESS FOR PRODUCING SAME

Isamu Saikawa; Shuntaro Takano, both of Toyama; Chosaku Yoshida, Takaoka; Okuta Takashima, Toyama; Kaishu Momonoi, Shinminato; Seietsu Kuroda, Toyama; Miwako Komatsu, Fuchumachi; Takashi Yasuda, Kosugimachi, and Yutaka Kodama, Toyama, all of Japan, assignors to Toyama Chemical Company, Limited, Tokyo, Japan

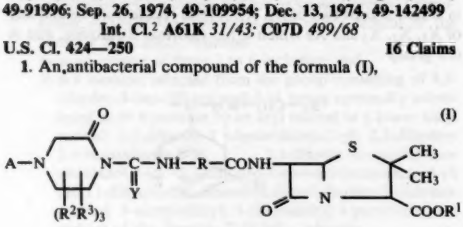
Division of Ser. No. 654,060, Jan. 30, 1976, Pat. No. 4,112,090, which is a continuation-in-part of Ser. No. 571,479, Apr. 24, 1975, Pat. No. 4,087,424. This application Jun. 15, 1978, Ser. No. 915,873

Claims priority, application Japan, May 9, 1974, 49-50663; May 13, 1974, 49-52254; May 31, 1974, 49-60787; Aug. 13, 1974, 49-91996; Sep. 26, 1974, 49-109954; Dec. 13, 1974, 49-142499

Int. Cl.[2] A61K *31/43;* **C07D** *499/68*

U.S. Cl. 424—250 **16 Claims**

1. An,antibacterial compound of the formula (I),



(I)

wherein R is a group represented by the formula

wherein R^5 represents a conventional penicillin substituent selected from the group consisting of alkyl, cycloakyl, cycloalkenyl, cycloalkadienyl, aryl, aralkyl, aryloxy, alkylthioalkyl, furyl, thienyl, oxazolyl, thiazolyl, isoxazolyl, isothiazolyl, imidazolyl, pyrazolyl, pyridyl, pyrazyl, pyrimidyl, pyridazyl, quinolyl, isoquinolyl, quinazolyl, indolyl, indazolyl, 1,3,4-oxadiazolyl, 1,2,4-oxadiazolyl, 1,3,4-thiadiazolyl and 1,2,4-thiadiazolyl, each of which may be substituted by halogen, hydroxy, nitro, alkyl, alkoxy, alkylthio, acyl or alkylsulfonylamino; R^6 represents a hydrogen atom; and R^5 and R^6 together with a common carbon atom may form a conventional penicillin substituent selected from the group consisting of cycloalkyl, cycloakenyl and cycloalkadienyl ring;

R^1 represents a hydrogen atom, a conventional penicillin blocking group of a conventional penicillin or a conventional salt-forming cation of a conventional penicillin;

each pair of R^2 and R^3 are linked to the same carbon atom, and each R^2 and R^3 of the three pairs of R^2 and R^3, which may be the same or different, represent individually a conventional penicillin substituent selected from the group consisting of hydrogen, halogen, carboxyl, alkyl, cycloalkyl, aryl, acyl, aralkyl, alkoxycarbonylalkyl, acyloxyalkyl, alkoxy, alkoxycarbonyl, cycloalkyloxycarbonyl, aralkoxycarbonyl, aryloxycarbonyl, amino and carbamoyl; any of which may be substituted by halogen, alkyl, alkoxy, alkylthio, acyl or nitro; and any pair of R^2 and R^3 together with a common carbon atom may form a conventional penicillin substituent which is a cycloalkyl ring;

A represents a conventional penicillin substituent selected from the group consisting of halogen, hydroxy, nitro, cyano, alkyl, alkenyl, alkadienyl, cycloalkyl, cycloalkenyl, cycloalkadienyl, aryl, acyl, aralkyl, acyloxyalkyl, alkoxy, cycloalkyloxy, alkoxycarbonyl, aryloxy, cycloalkyloxycarbonyl, aryloxycarbonyl, aralkoxycarbonyl, alkylsulfonyl, cycloalkylsulfonyl, arylsulfonyl, carbamoyl, thiocarbamoyl, acylcarbamoyl, acylthiocarbamoyl, alkylsulfonylcarbamoyl, arylsulfonylcarbamoyl, alkylsulfonylthiocarbamoyl, arylsulfonylthiocarbamoyl, sulfamoyl, alkoxycarbonylthioalkyl, alkoxythiocarbonylthioalkyl, amino, thiazolyl, pyridyl, pyridazyl, pyrazyl, thiadiazolyl, triazolyl, tetrazolyl and quinolyl, each of which may be substituted by a conventional penicillin substituent selected from the group consisting of halogen, hydroxyl, alkyl, alkoxy, alkylthio, nitro, cyano, amino, carboxyl and acyl; and

Y represents an oxygen or sulfur atom.

6. A pharmaceutical composition comprising an anti-bacterially effective amount of a compound of claim 1 and a pharmaceutically acceptable carrier.

4,219,555

2-BROMOERGOSINE AND PHARMACOLOGICALLY COMPATIBLE ACID ADDITION SALTS THEREOF AS WELL AS THEIR USE FOR THE TREATMENT OF ARTERIAL HYPERTENSION AND OR HEART ARRYTHMIAS

Rudolf Ručman, and Nebojša Djordjevic, both of Ljubljana, Yugoslavia, assignors to LEK, Tovarna farmacevtskih in kemicnih izdelkov, N.sol.o., Ljubljana, Yugoslavia

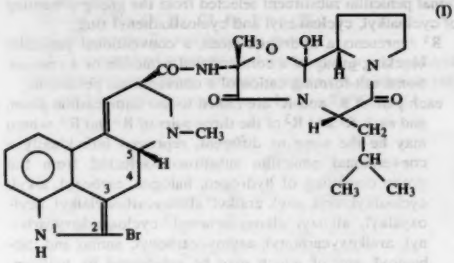
Filed Aug. 9, 1978, Ser. No. 932,386

Claims priority, application Yugoslavia, Sep. 9, 1977, 2161/77

Int. Cl.[3] C07D *519/02;* **A61k** *31/495*

U.S. Cl. 424—250 **6 Claims**

1. A medicine for the treatment of arterial hypertension or of heart arrythmias or both comprising a pharmacologically active amount of physiologically compatible acid addition salt of 2-bromoergosine of the formula I:



(I)

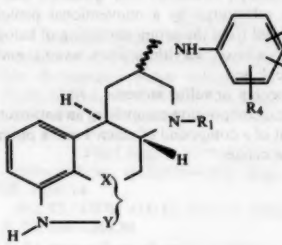
4,219,556

SUBSTITUTED-8-PHENYLAMINO ERGOLINES

Hartmut Hauth, Riehen, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed Sep. 1, 1978, Ser. No. 939,105
Claims priority, application Switzerland, Sep. 2, 1977, 10732/77
Int. Cl.[2] C07D *457/12;* A61K *31/48*
U.S. Cl. 424—261 10 Claims

1. A compound of formula I



I

wherein

R_1 is hydrogen or lower alkyl,

R_2, R_3 and R_4 are, independently, hydrogen, halogen lower alkyl, lower alkoxy or $CONR_5R_6$ wherein R_5 and R_6 are, independently, hydrogen or lower alkyl, and $\widehat{x\ y}$ is $—CH_2—CH=$ or $—CH=C=$,

or a pharmaceutically acceptable acid addition salt thereof.

4. A pharmaceutical composition useful in treating Morbus Parkinson or inhibiting prolactin secretion comprising a therapeutically effective amount of a compound of claim 1 in association with a pharmaceutical carrier or diluent.

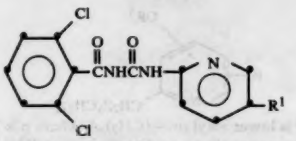
4,219,557

1-(2,6-DIHALOBENZOYL)-3-(5-SUBSTITUTED-2-PYRIDINYL)UREA COMPOUNDS AND INSECTICIDAL USE

John L. Miesel, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 31, 1978, Ser. No. 938,723
Int. Cl.[2] A01N *9/22;* C07D *213/75*
U.S. Cl. 424—263 12 Claims

1. Compound of the formula



wherein R^1 is chloro, bromo, or trifluoromethyl; or an acid addition salt thereof or an N-oxide of a compound wherein R^1 is bromo or trifluoromethyl.

9. Method of suppressing insects of an order selected from the group consisting of Coleoptera, Diptera, Lepidoptera, and Orthoptera, which comprises applying to a locus of the insects an effective amount of an active agent which is a compound of claim 1.

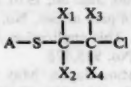
4,219,558

ORGANIC FLUORO-IMIDES AND THEIR USE AS MITICIDES, ETC.

Hans B. Madsen; Per D. Klemmensen, and Hans Kolind-Andersen, all of Lemvig, Denmark, assignors to A/S Cheminova, Lemvig, Denmark

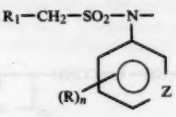
Division of Ser. No. 742,592, Nov. 17, 1976, Pat. No. 4,148,901.
This application Dec. 7, 1978, Ser. No. 967,508
Claims priority, application United Kingdom, Nov. 25, 1975, 48441/75
Int. Cl.[2] C07D *213/75;* A01N *9/12*
U.S. Cl. 424—263. 12 Claims

1. A process for protecting crop plants from attack by mites, which comprises treating the crop plants with an effective amount of at least one compound of the formula



I

in which at least two of X_1, X_2, X_3 and X_4 are fluorine and any of X_1, X_2, X_3 and X_4 which is not fluorine, is chlorine, and A is a group



wherein

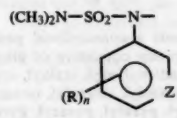
R_1 is hydrogen or a halogen atom,

Z is CH or a nitrogen atom,

n is 0 or 1, and

R is alkyl having 1 to 6 carbon atoms or a halogen atom;

or A is a group



in which Z, n and R have the above-stated meanings.

10. The method of claim 1 wherein the compound of Formula I is N-(2,2-difluoro-1,1,2-trichloroethylthio)-N-(3-pyridyl) methane sulfonamide.

4,219,559
N-HETEROCYCLYL-4-PIPERIDINAMINES

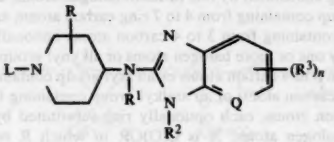
Frans Janssens, Rijmenam; Raymond Stokbroekx; Joseph Torremans, both of Beerse, and Marcel Luyckx, Geel, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Continuation-in-part of Ser. No. 892,534, Apr. 3, 1978, abandoned. This application Jan. 10, 1979, Ser. No. 2,276

Int. Cl.[2] A61K *31/445;* **C07D** *401/04*

U.S. Cl. 424—267 **19 Claims**

1. A chemical compound selected from the group consisting of a N-heterocyclyl-4-piperidinamine having the formula



and the pharmaceutically acceptable acid addition salts thereof, wherein

R is a member selected from the group consisting of hydrogen and lower alkyl;

R^1 is a member selected from the group consisting of hydrogen, lower alkyl, cycloalkyl, aryllower alkyl and lower alkanoyl;

R^2 is a member from the group consisting of hydrogen, alkyl having from 1 to 10 carbon atoms, aryl, cycloalkyl and mono- and diaryl(lower alkyl);

R^3 is a member independently selected from the group consisting of, halo, lower alkyl, lower alkyloxy and trifluoromethyl;

n is an integer of from 0 to 2 inclusive;

Q is a member selected from the group consisting of CH and N; and

L is a member selected from the group consisting of lower alkyl, which is optionally substituted with up to 3 substituents each independently selected from the group consisting of halo, cyano, hydroxy, isothiocyanato, lower alkyloxy, aryl, aryloxy, arylthio, arylsulfonyl, amino; lower alkenyl; aryllower alkenyl; cycloalkyl, being optionally substituted with a cyano and/or or an aryl group; 1-(aryl-lower alkyl)-1H-benzimidazol-2-yl; and a radical of the formula $Z\text{-}C_mH_{2m}$-, wherein

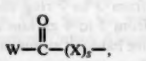
m is an integer of from 1 to 6 inclusive; and

Z is a member selected from the group consisting of 4,5-dihydro-5-oxo-1H-tetrazol-1-yl, being optionally substituted in its 4-position by an aryl radical or a lower alkyl radical; 2,3-dihydro-1,4-benzodioxin-2-yl; 2,3-dihydro-1,4-benzodioxin-6-yl; 2,3-dihydro-2-oxo-1H-benzimidazol-1-yl; 2,3-dihydro-3-oxo-4H-benzoxazin-4-yl; (10,11-dihydro-5H-dibenzo[a,d]cyclohepten-5-ylidene)-methyl; 4-morpholinyl; 1-piperidinyl; 1-pyrrolidinyl; a radical of the formula $T\text{-}N(R^4)$-, wherein

R^4 is a member selected from the group consisting of hydrogen, lower alkyl and aryllower alkyl; and

T is a member selected from the group consisting of lower alkyl, aryl, aryllower alkyl, 1H-benzimidazol-2-yl; and

a radical of the formula



wherein

s is the integer 0 or 1;

X is a member selected from the group consisting of O and $—N(R^5)$-, said R^5 being a member selected from the group consisting of hydrogen, lower alkyl, aryl-lower alkyl, lower alkanoyl and aroyl; and

W is a member selected from the group consisting of lower alkyl, aryl, aryllower alkyl, amino, arylamino, mono- and di(lower alkyl)amino, mono- and di(aryl-lower alkyl)amino, 1-piperidinyl, 1-pyrrolidinyl and 4-morpholinyl;

where aryl as used in the foregoing definitions, is a member selected from the group consisting of phenyl, substituted phenyl, naphthalenyl, thienyl, halothienyl, (lower alkyl)thienyl, pyridinyl, mono- and di(lower alkyloxy)pyridinyl, furanyl and 1-(lower alkyl)pyrrolyl; wherein said substituted phenyl is phenyl having from 1 to 3 substituents each independently selected from the group consisting of halo, hydroxy, nitro, cyano, trifluoromethyl, lower alkyl, lower alkylthio, lower alkylsulfonyl, lower alkylsulfonyllower alkyl, phenyllower alkylsulfonyl, phenylsulfonyllower alkyl, amino, mono- and di-(lower alkyl)amino, lower alkanoyl, a radical of the formula $R^6\text{—}C_pH_{2p}\text{—}O$—, wherein

p is an integer of from 1 to 6 inclusive; and

R^6 is a member selected from the group consisting of hydrogen, amino, cyano, phenyl, aminocarbonyl, mono- and di(lower alkyl)aminocarbonyl, lower alkyloxycarbonyl, phenyllower alkyloxycarbonyl, 4-morpholinylcarbonyl, 1-piperidinylcarbonyl and 1-pyrrolidinylcarbonyl, and a radical of the formula $R^7\text{—}O$—, wherein

R^7 is a member selected from the group consisting of alkanoyl, phenylcarbonyl, phenyllower alkylcarbonyl, lower alkyloxycarbonyl, phenyllower alkyloxycarbonyl, aminocarbonyl, phenylaminocarbonyl, mono- and di-(lower alkyl)aminocarbonyl wherein said phenyl in the definition of said R^7 may be optionally substituted with up to 3 substituents each independently selected from the group consisting of halo, cyano, nitro, lower alkyl and lower alkyloxy; and

wherein said aroyl in the definition of said L represents arylcarbonyl wherein said aryl is as defined hereabove.

10. An antihistaminic pharmaceutical composition comprising an inert carrier material and as an active ingredient an effective antihistaminic amount of a chemical compound selected from the group consisting of {4-[2-{4-[1-(4-fluorophenylmethyl)-1H-benzimidazol-2-ylamino]-1-piperidinyl}ethyl]phenoxy}acetonitrile and the pharmaceutically acceptable acid addition salts thereof.

4,219,560
PIPERIDINE AND PYRROLIDINE ALCOHOLS

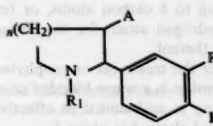
William J. Houlihan, Mt. Lakes, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Continuation-in-part of Ser. No. 862,404, Dec. 20, 1977, abandoned. This application Apr. 17, 1978, Ser. No. 896,896

Int. Cl.[2] C07D *405/04;* **A61K** *31/40, 31/445*

U.S. Cl. 424—267 **9 Claims**

1. A compound of the formula



wherein

A is $—CH_2OH$, and

R_1 is hydrogen or lower alkyl having 1 to 2 carbon artoms, i.e., methyl or ethyl, and

R_2 and R_3 together represent methylenedioxy, and

n is 1 or 2, ora pharmaceutically acceptable acid addition salt thereof.

8. A method of treating lipidemia which comprises administering to a mammal in need of said treatment a hypolipidemically effective amount of a compound of claim 1.

4,219,561

ALKANOLAMINE DERIVATIVES

Leslie H. Smith, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

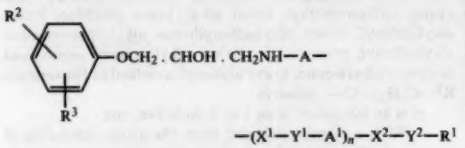
Filed Sep. 15, 1978, Ser. No. 942,815

Claims priority, application United Kingdom, Sep. 22, 1977, 39534/77

Int. Cl.[2] **A61K** *31/275, 31/18, 31/17, 31/165*

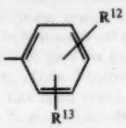
U.S. Cl. 424—304 **10 Claims**

1. An alkanolamine derivative of the formula:



$$-(X^1-Y^1-A^1)_n-X^2-Y^2-R^1$$

wherein A stands for an alkylene radical of from 2 to 6 carbon atoms; wherein n stands for the integer 2 or 3, wherein A^1, the individual values of which may be the same or different, stands for an alkylene radical of up to 6 carbon atoms; wherein R^1 stands for the hydrogen atom or for an alkyl, haloenoalkyl, alkenyl or cycloalkyl radical each of up to 10 carbon atoms, or for an aryl radical of the formula:



wherein R^2, R^3, R^{12} and R^{13}, which may be the same or different, each stands for a hydrogen or halogen atom, a hydroxy, amino, nitro, carbamoyl or cyano radical, or an alkyl, alkenyl, alkoxy, alkylthio, alkenyloxy, alkanoyl or acylamino radical each of up to 6 carbon atom, or wherein R^2 and R^3 together, and/or R^{12} and R^{13} together, form the trimethylene, tetramethylene or buta-1,3-dienylene radical such that together with the adjacent benzene ring they form respectively the indanyl, 5,6,7,8-tetrahydronaphthyl or naphthyl radical; wherein X^1 and X^2, the individual values of which may be the same or different, each stands for an amidic linkage of the formula —NHCO— or —CONH—; wherein Y^1, the individual values of which may be the same or different, stands for a direct link or (except when X^1 is —CONH—) for the imino (—NH—) radical and wherein Y^2 stands for a direct link, or for an alkylene, oxyalkylene or alkyleneoxy radical each of up to 6 carbon atoms, or (except when X^2 is —CONH—) for the imino (—NH—) radical or for an alkylimino or iminoalkylene radical each of up to 6 carbon atoms, or (except when R^1 stands for the hydrogen atom) for the oxygen atom; or an acid-addition salt thereof.

9. A method for the treatment or prophylaxis of heart diseases and hypertension in a warm-blooded animal which comprises administering to said animal an effective amount of at least one compound claimed in claim **1**.

4,219,562

3-(HYDROCARBYLTHIOMETHYL)-2,2-DIMETHYLCYCLOPROPANECARBOXYLATE PESTICIDES

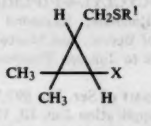
Steven A. Roman, Oakdale, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Mar. 8, 1979, Ser. No. 18,479

Int. Cl.[2] **A01N** *9/12;* **C07C** *69/74, 121/66*

U.S. Cl. 424—304 **12 Claims**

1. A compound of the formula



wherein R^1 represents an alkyl group containing from 1 to 10 carbon atoms optionally substituted by one or more halogen atoms; a (cycloalkyl)alkyl group containing from 3 to 7 ring carbon atoms, a total of from 4 to 9 carbon atoms and optionally ring-substituted by one or more halogen atoms; a cycloalkyl group containing from 4 to 7 ring carbon atoms; an alkenyl group containing from 3 to 4 carbon atoms optionally substituted by one or more halogen atoms or alkynyl group containing from 3 to 4 carbon atoms or an aryl group containing from 6 to 12 carbon atoms or an aralkyl group containing from 7 to 10 carbon atoms, each optionally ring-substituted by one or more halogen atoms; X is C(O)OR in which R represents 3-phenoxybenzyl or an α-cyano-3-phenoxybenzyl group.

12. A method of controlling pests which comprises applying to the pests or their habitat a pest controlling effective amount of a compound according to claim **1**.

4,219,563

CYCLOPROPANECARBOXYLATE PESTICIDES

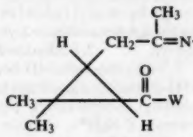
James E. Powell, Ripon, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Jun. 21, 1979, Ser. No. 50,735

Int. Cl.[2] **A01N** *9/20;* **C07C** *131/02*

U.S. Cl. 424—304 **7 Claims**

1. A compound of the formula



wherein R^1 is an alkyl group containing from 1 to 10 carbon atoms optionally substituted by one or more halogen atoms; a (cycloalkyl)-alkyl group containing from 3 to 7 ring carbon atoms, a total of from 4 to 9 carbon atoms and optionally ring-substituted by one or more halogen atoms; a cycloalkyl group containing from 3 to 7 ring carbon atoms; an alkenyl group containing from 2 to 4 carbon atoms optionally substituted by one or more halogen atoms or alkynyl group containing from 2 to 4 carbon atoms or an aryl group containing from 6 to 12 carbon atoms or an aralkyl group containing from 7 to 10 carbon atoms, each optionally ring-substituted by one or more halogen atoms;W is —OR in which R is a 3-phenoxybenzyl or α-cyano-3-phenoxybenzyl group.

7. A method of controlling pests which comprises applying to the pests or their habitat a pest controlling effective amount of a compound according to claim **1**.

4,219,564
VINYLCYCLOPROPANECARBOXYLIC ACID-3-PHENOXY-α-VINYLBENZYL ESTERS, PROCESSES FOR PRODUCING THEM, AND THEIR USE IN COMBATING PESTS

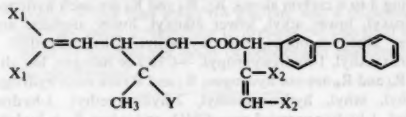
Jozef Drabek, Oberwil; Peter Ackermann, Reinach; Saleem Farooq, Ettingen; Laurenz Gsell, Basel, and Odd Kristiansen, Mohlin, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 958,453, Nov. 6, 1978, abandoned. This application Jun. 22, 1979, Ser. No. 51,080

Int. Cl.[2] **C07C** *69/74;* **A01N** *9/30*

U.S. Cl. 424—305 **7 Claims**

1. A compound of the formula



wherein

X_1 is fluorine, chlorine or bromine,

X_2 is hydrogen or bromine, and

Y is hydrogen or methyl.

6. An insecticidal and acaricidal composition comprising an insecticidally and acaricidally effective amount of a compound according to claim 1, together with a suitable carrier therefor.

4,219,565
OXYIMINO-SUBSTITUTED CYCLOPROPANECARBOXYLATE PESTICIDES

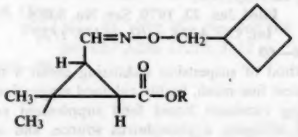
Steven A. Roman, Oakdale, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Jun. 26, 1979, Ser. No. 52,157

Int. Cl.[2] **C07C** *13/02;* **A01N** *9/20*

U.S. Cl. 424—305 **9 Claims**

1. A compound of the formula



wherein R is pentachlorobenzyl or 2,6-dichlorobenzyl.

4,219,566
PHENYLGLYOXYLIC ACIDS AND DERIVATIVES THEREOF

Ian T. Barnish, Ramsgate; Peter E. Cross, Canterbury; John C. Danilewicz, Ash, N. Canterbury; Malcolm Morville, Margate, all of England, and Michael G. Page, Waterford, Conn., assignors to Pfizer Inc., New York, N.Y.

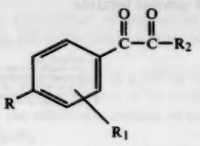
Filed Jun. 16, 1978, Ser. No. 915,904

Claims priority, application United Kingdom, Jul. 1, 1977, 27756/77

Int. Cl.[2] **A61K** *31/19, 31/235, 31/22*

U.S. Cl. 424—317 **3 Claims**

1. A method for treating diabetes in a human subject having such condition which comprises orally or parenterally administering to said human subject a diabetes treating amount of a compound selected from the group consisting of a compound of the formula



wherein R is selected from the group consisting of hydrogen, alkyl having from one to four carbon atoms, hydroxy, alkoxy having from one to four carbon atoms, alkylthio having from one to five carbon atoms, alkanoyloxy having from two to four carbon atoms, chloro, fluoro, bromo and iodo; R_1 is selected from the group consisting of hydrogen, alkyl having from one to four carbon atoms, chloro, bromo, fluoro and iodo; R_2 is selected from the group consisting of hydroxy and alkoxy having from one to four carbon atoms; and a pharmaceutically acceptable base salt wherein R_2 is hydroxy.

4,219,567
AMIDINOUREAS FOR LOWERING BLOOD PRESSURE

Julius Diamond, Morris Plains, N.J., and Jerome J. Zalipsky, Melrose Park, Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

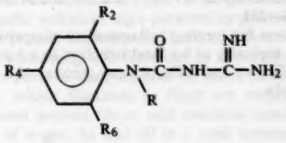
Division of Ser. No. 842,994, Oct. 17, 1977, which is a continuation of Ser. No. 629,208, Nov. 5, 1975, abandoned, which is a continuation-in-part of Ser. No. 379,773, Jul. 16, 1973, abandoned. This application Apr. 24, 1978, Ser. No. 899,672

The portion of the term of this patent subsequent to Jan. 15, 1997, has been disclaimed.

Int. Cl.[2] **A61K** *31/17*

U.S. Cl. 424—322 **33 Claims**

1. A method for lowering blood pressure comprising administering to a patient suffering from hypertension a therapeutically effective amount between 0.5 mg and 500 mg per dosage unit of at least one compound of the formula:



where:

R is hydrogen;

R_2 is chloro or bromo;

R_4 is hydrogen, chloro, bromo or methyl; and

R_6 is hydrogen, chloro or bromo; and

the non-toxic acid addition salts thereof.

4,219,568
METHOD OF INCREASING RENAL BLOOD FLOW WITH DOPAMINE DERIVATIVES

Leon I. Goldberg, Chicago, Ill.; Joseph G. Cannon, and John P. Long, both of Iowa City, Iowa, assignors to University Patents, Inc., Norwalk, Conn.

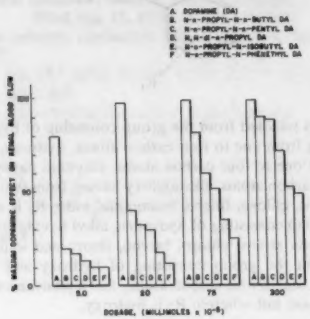
Filed Mar. 1, 1978, Ser. No. 882,353

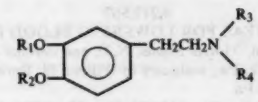
Int. Cl.[2] **A61K** *31/135*

U.S. Cl. 424—330 **9 Claims**

1. A method of increasing renal blood flow without affecting cardiac contractility comprising the step of administering to a

patient in need of same an effective dose therefor of a compound having the general formula





where R_1 and R_2 are hydrogen or an acyl group containing from 2 to about 6 carbon atoms, R_3 is a n-propyl substituent, and R_4 is a member selected from the group consisting of n-propyl, n-butyl, isobutyl, n-pentyl and phenethyl substituents.

4,219,569

PROCESS FOR TREATING INFLAMMATION

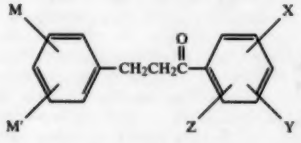
Eldridge M. Glenn, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Oct. 10, 1978, Ser. No. 949,438

Int. Cl.[2] A61K *31/12, 31/22, 31/135, 31/167*

U.S. Cl. 424—331 **8 Claims**

1. A process for treating inflammation comprising the administration topically or by local injection to a human or animal of an effective anti-inflammatory amount of a compound of the formula:



Formula I

wherein M and M′ are hydrogen, hydroxy, halogen, lower alkyl of from 1 to 3 carbon atoms, lower alkoxy of from 1 to 3 carbon atoms; X, Y and Z are hydrogen, hydroxy, halogen, lower alkoxy of from 1 to 3 carbon atoms or lower acyloxy of from 1 to 6 carbon atoms, in association with appropriate pharmaceutical carriers.

4,219,570

INSECT REPELLENTS AND A METHOD OF REPELLING INSECTS

Shinichi Inazuka, Yokohama, and Shigekatsu Tsuchiya, Yokosuka, both of Japan, assignors to Ajinomoto Company, Incorporated, Tokyo, Japan

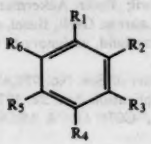
Filed Feb. 14, 1979, Ser. No. 11,991

Claims priority, application Japan, Feb. 20, 1978, 53-18296

Int. Cl.[2] A01N *9/24*

U.S. Cl. 424—343 **10 Claims**

1. A method for repelling an insect which is a member of the order of Thysanura, Orthoptera, Isoptera, Hemiptera, Lepidoptera, Diptera, Coleoptera, Hymenoptera or Acari, which comprises: subjecting said insect to a repelling amount of at least one compound having the formula:



wherein R_1 is an α-branched chain alkyl or alkenyl radical having 3 to 6 carbon atoms; R_2, R_4 and R_6 are each hydrogen, hydroxyl, lower alkyl, lower alkoxyl, lower aliphatic acyl, lower alkoxycarbonyl, hydroxymethyl, 2-hydroxyethyl, 1-hydroxyethyl, 1-hydroxypropyl, —CHO or halogen, but all of R_2, R_4 and R_6 are not hydrogen; R_3 and R_5 are each hydrogen, methyl, ethyl, hydroxymethyl, 2-hydroxyethyl, 1-hydroxyethyl, 1-hydroxypropyl or —CHO; and when R_4 is hydroxy or 2-hydroxyethyl, all of R_2, R_3, R_5 and R_6 may not be hydrogen.

4,219,571

PROCESS FOR PRODUCING A SWEETENER

Toshio Miyake, Okayama, Japan, assignor to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Filed Jun. 15, 1978, Ser. No. 915,876

Int. Cl.[2] A23L *1/236*

U.S. Cl. 426—48 **5 Claims**

1. A process for producing a sweetener containing alpha-glycosyl stevioside comprising allowing alpha-glucosyltransferase to react on an aqueous solution containing stevioside and alpha-glucosyl sugar compound for a time sufficient to produce said alpha-glucosyl stevioside.

4,219,572

SUSPENSION STABILIZATION OF MGO IN LIQUID FEED SUPPLEMENTS USING XANTHAN GUM

Kristina R. Jackman, San Diego, Calif., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Jan. 22, 1979, Ser. No. 5,055

Int. Cl.[2] A23K *1/02, 1/175, 1/22*

U.S. Cl. 426—69 **6 Claims**

1. A method of suspension stabilizing about 4 to about 6 weight percent fine-mesh, highly calcined magnesium oxide in a non-gelling ruminant liquid feed supplement comprising non-protein nitrogen, a phosphorus source, and an energy source, which comprises adding 0.025–0.2% by weight xanthan gum to said ruminant liquid feed supplement

---

4,219,573

MICROWAVE POPCORN PACKAGE

James R. Borek, Burnsville, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.

Filed Feb. 26, 1979, Ser. No. 15,036

Int. Cl.[2] B65D *81/34*

U.S. Cl. 426—107 **9 Claims**

1. An improved expandable popcorn container for use in microwave ovens with the containers being adapted to store popcorn, oil and salt before popping and being adapted to

contain the popcorn, oil and salt during exposure to microwave radiation to effect the popping of the popcorn, said container being microwave transparent and having popcorn, oil and salt therein and being sealed whereby vapor produced during heating expands the internal volume of the container to allow room for popping of the popcorn, said container having one wall adapted to rest on the floor of the oven and be disposed between the popcorn and floor of a microwave oven, wherein the improvement comprises:

said container also including a layer of thermal insulating material associated with the wall in a manner such that the material will be disposed between the popcorn and oven floor during exposure of the container and popcorn to microwave radiation, said material having a thermal conductivity of less than about 0.001 calories/cm^2 °C./cm, a density of less than about 0.4 gm/cm^3 and a thickness of less than about $\frac{1}{8}$" sufficient to prevent the loss of at least about 18 calories per gram of popcorn in the container during popping.

4,219,574

FOOD CASING

Herman S. Chiu, Chicago, Ill., assignor to Union Carbide Corporation, New York, N.Y.

Filed Feb. 28, 1978, Ser. No. 882,613
Int. Cl.^{2} A22C *13/00*
U.S. Cl. 426—135 **26 Claims**

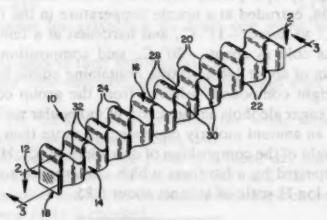
1. A food casing suitable to impart an apparent smoke color to at least a portion of a food product, comprising a food casing having interior and exterior surfaces and a coating consisting essentially of caramel and an antiblock agent on at least a portion of one of said surfaces; said antiblock agent being selected from the group consisting of mineral oil, silicone oil, vegetable oil, polyoxyethylene (20) sorbitan monooleate, and dioctyl ester of sodium sulfosuccinic acid.

4,219,575

POTATO SEGMENT AND PROCESS FOR PREPARING FROZEN FRENCH FRIED POTATOES SUITABLE FOR MICROWAVE REHEATING

Francis R. Saunders, Lake Oswego, and Richard L. McLaughlin, Aloha, both of Oreg., assignors to Amfac Foods, Inc., Portland, Oreg.

Filed Nov. 13, 1978, Ser. No. 960,166
Int. Cl.^{2} A23L *1/216, 3/32*
U.S. Cl. 426—242 **15 Claims**



1. Frozen french fried potatoes suitable for reheating with microwave energy,

each potato being in the form of an elongate body having a generally rectangular cross-section and first and second pairs of generally opposing side surfaces, each side surface having an alternating sequence of laterally extending, rounded hills and valleys of substantially uniform dimensions,

each of said hills having a top and each of said valleys having a bottom,

each hill of one side surface of said first pair opposing a corresponding valley of the other side surface of said first pair,

each hill of one side surface of said second pair opposing a corresponding hill of the other side surface of said second pair,

the distance between the top of a hill of one side surface of said first pair and the bottom of its corresponding opposing valley of the other side surface of said first pair being one-quarter inch,

and the distance between the top of a hill of one side surface of said second pair and the top of its corresponding opposing hill of the other side surface of said second pair being one-half inch; and

each potato having a total solids content of from about fifty-six percent to about sixty-four percent by weight;

whereby said potatoes, when reheated from their frozen state with microwave energy, resemble in quality, color, texture, flavor, and odor, french fried potatoes prepared directly from fresh potatoes.

4,219,576

METHOD OF MANUFACTURING A SIMULATED CORNED BEEF PRODUCT

Yōichi Kawasaki; Hitoshi Taniguchi; Yukiomi Yamato, all of Sennan, and Kyoko Minamiyama, Sakai, all of Japan, assignors to Fuji Oil Company, Limited, Osaka, Japan

Continuation of Ser. No. 838,970, Oct. 3, 1977, abandoned. This application Mar. 26, 1979, Ser. No. 24,043
Claims priority, application Japan, Oct. 5, 1976, 51/120118
Int. Cl.^{2} A23J *3/00*; A23L *1/27*
U.S. Cl. 426—262 **3 Claims**

1. A method of manufacturing a simulated corned beef product, which comprises:

mixing fibrillated protein fibers, having an average length of 5 to 30 mm, with a mixture of an emulsion, a seasoning agent, a flavoring agent, a spice and a coloring agent; said fibrillated protein fibers having a pH of 5-6.5 after said mixing and being prepared by heating a slurry of proteinaceous material, of which the pH value has been adjusted to about the isoelectric point of the proteinaceous material, under sufficient high pressure to produce elongated tender protein filaments or fibers, and then extruding the slurry containing said filaments or fibers through an orifice to remove the filaments or fibers from the protein slurry, which filaments or fibers are employed as said fibrillated protein fibers; said emulsion consisting essentially of water, fat and oil in a total amount within the range of 30 to 70% by weight, and a proteinaceous material in an amount within the range of 4 to 14% by weight, the percentages by weight being based on the total weight of the emulsion; the amount of the emulsion being 30 to 70% by weight relative to the total weight of the mixture,

filling a casing with the resultant mixture, which resultant mixture consists essentially of the fibrillated protein fibers, the emulsion, the seasoning agent, the flavoring agent, the spice and the coloring agent, and

sterilizing the casing, with the resultant mixture therein, by heating.

4,219,577

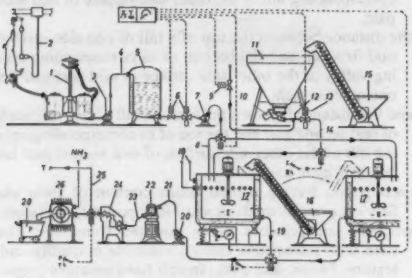
PROCESS FOR THE PHYSICAL DISCOLORATION OF ANIMAL BLOOD

Jorgen W. Pedersen, and Thorkild Lausen, both of Roskilde, Denmark, assignors to Nutridan Engineering A/S, Herlev, Denmark

Filed Feb. 21, 1979, Ser. No. 12,965
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1978, 2807554; Denmark, Mar. 8, 1978, 963/78
Int. Cl.^{2} A23L *1/27*
U.S. Cl. 426—264 **19 Claims**

1. A process for the discoloration of blood through reaction in a fat milieu, comprising the steps of preparing a mixture of

melted fat, protein, water and blood, and subjecting said mixture to a considerable drop of pressure sufficient to cause the



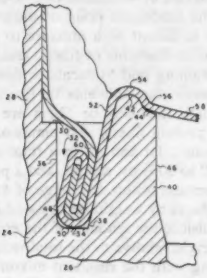
blood's red corpuscles to be covered by a protein/fat film and thereby faded.

4,219,578

METHOD FOR PREVENTING BUCKLE OF BEER-CAN TOPS DURING PASTEURIZATION

George J. Collias, Oak Park, Ill., assignor to Kepros-Ganes Company, Oak Park, Ill.

Filed Sep. 8, 1978, Ser. No. 940,563
Int. Cl.[2] A23L *3/04, 3/10*
U.S. Cl. 426—407 **7 Claims**



1. In the processing of canned beer wherein each can has a top panel and a body sidewall which are joined together to form a double seam area, a method for preventing buckling of the can's top during pasteurization, comprising:

capturing the top of the can within anti-buckle ring means which encircles and braces the double seam area of the can from substantial radial displacement without substantially inhibiting upward bulge of the can's top panel such that upward bulge of the can's top panel during pasteurization of the beer does not separate the ring means from the can, and buckling of the top of the can is prevented by virtue of the double seam area being held from radial displacement;

transporting the can through a pasteurization station with the ring means mated with the can; and

automatically removing the ring means from the can subsequent to pasteurization.

4,219,579

MEANS AND METHOD IMPROVING TASTE OF SACCHARINE SWEETENED FOOD PRODUCTS

Carl Piampiano, 2601 Wadsworth Rd., Zion, Ill. 60099

Filed Jan. 25, 1979, Ser. No. 6,444
Int. Cl.[2] A23L *1/236*
U.S. Cl. 426—548 **9 Claims**

1. An artificial sweetner comprising saccharine and at least an amount of an aqueous extract of *Gentiana lutea* sufficient to reduce the bitter aftertaste of saccharine.

4,219,580

FLOUR SUBSTITUTES

Anibal Torres, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 766,218, Feb. 7, 1977, abandoned. This application Jun. 29, 1978, Ser. No. 920,453
Int. Cl.[2] A21D *2/18, 2/32*
U.S. Cl. 426—549 **10 Claims**

1. A composition, suitable for use as a flour substitute, which comprises:

(a) at least one member selected from the group consisting of cellulose and a non-digestible, acid-treated starch derivative,

(b) xanthan gum, and

(c) as an emulsifier, lecithin;

wherein (b) is present in an amount in the range from about 1 to about 3.5 percent by weight, based on the weight of (a) and is in addition to any lecithin supplied to said composition in the form of egg yolk; and (c) is present in an amount from about 2 to about 7 percent by weight, based on the weight of (a).

4,219,581

ICE CONFECTIONS AND PROCESSES FOR THEIR PREPARATION

Iain C. M. Dea, and Devamanohari Pillai, both of Bedford, England, assignors to Thomas J. Lipton, Inc., Englewood Cliffs, N.J.

Filed Apr. 23, 1979, Ser. No. 32,435
Claims priority, application United Kingdom, Apr. 24, 1978, 16088/78
Int. Cl.[2] A23G *9/00*
U.S. Cl. 426—565 **10 Claims**

1. A hardened stabilised ice cream confection comprising an aerated composition of ice crystals, edible fat particles and an aqueous syrupy phase, which has been shear-frozen under aeration, extruded at a nozzle temperature in the range about −8° C. to about −13° C., and hardened at a temperature at least as cold as about −20° C.; said composition having an overrun of about 140%-200%; containing edible low molecular weight compounds selected from the group consisting of sugar, sugar alcohols and glycerol of molecular weight at most 600 in an amount molarly equivalent to more than about 32% by weight of the composition of disaccharide ($C_{12}H_{22}O_{11}$); and characterised by a hardness which corresponds to a measure on the log H scale of at most about 0.85.

4,219,582

XANTHAN GUM AND LOCUST BEAN GUM IN CONFECTIONERY USE

Hsiung Cheng, San Diego, Calif., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 29, 1979, Ser. No. 24,936
Int. Cl.[2] A23G *3/00*; A23L *1/04*
U.S. Cl. 426—578 **6 Claims**

1. A starch jelly confectionery product having sugar, starch and color and flavoring agents, also comprising from about 0.08 to 0.50% by weight of a 1:3 to 3:1 blend of xanthan gum and locust bean gum.

4,219,583

PROCESS OF INCREASING VISCOSITY IN AGITATED MILK SYSTEMS

Robert S. Igoe, San Diego, Calif., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Jan. 15, 1979, Ser. No. 3,190
Int. Cl.[2] A23C *9/10*
U.S. Cl. 426—580 8 Claims

1. The process for increasing the viscosity without solidification of a fluid milk mix at normal refrigeration temperatures under agitation which comprises adding to said milk mix a premixed blend, in either dry or aqueous concentrate form, consisting essentially of a gum and a phosphate wherein said gum is selected from the group consisting of xanthan gum, guar gum, and carboxymethyl cellulose and said phosphate is selected from the group consisting of sodium hexametaphosphate, sodium tripolyphosphate, and tetrasodiumpolyphosphate (TSPP), the blend of the two components being in approximately equal weight amounts; the amount of the premixed blend added being such that from about 0.05% to about 1% gum (weight/volume) is in the milk mix.

4,219,584

HARD BUTTER COMPOSITION

Hiroyuki Mori, Yokohama; Yukiya Iwanaga; Kazuo Akamatsu, both of Osaka, and Hayato Kubota, Izumi, all of Japan, assignors to Fuji Oil Company, Limited, Osaka, Japan

Filed Sep. 5, 1978, Ser. No. 939,797
Claims priority, application Japan, Sep. 8, 1977, 52-108455
Int. Cl.[2] A23D *5/00*
U.S. Cl. 426—607 3 Claims

1. A hard butter composition comprising as the principal ingredients thereof an intermediate fraction of palm oil and a solid fat fraction of shea fat, said shea fat fraction containing less than 80% by weight of 2-oleo-1, 3-distearin and 2-oleo-palmito-stearin and said intermediate fraction of palm oil having a slip melting point of 29.0°–32.5° C. and a clear point of not more than 34° C., the ratio of the solid fat fraction of shea fat to the intermediate fraction of palm oil being 25 to 75:75 to 25 parts by weight.

4,219,585

PROCESS FOR EXTRACTING OIL FROM EGG YOLKS

Nancy I. Herring, 3699 Southmont Dr., Montgomery, Ala. 36105

Filed Oct. 2, 1978, Ser. No. 948,001
Int. Cl.[2] A23L *1/32*
U.S. Cl. 426—614 3 Claims

1. The process for extracting oil from egg yolks which comprises:

hard-boiling eggs in their shells in water;

breaking and removing said shells from said eggs after boiling;

separating the hard-boiled yolks from the white albumen portions and retaining said yolks; and

heating said hard-boiled egg yolks in a clean dry cooking vessel at a temperature of between 375° and 400° F. for some 5 minutes until all oil is released and all other content of said egg yolks is charred.

4,219,586

AUGER PRESS

George W. Parks, Jr., 314 36th St., Snyder, Tex. 79549

Filed May 15, 1978, Ser. No. 906,037
Int. Cl.[2] A23K *1/04*
U.S. Cl. 426—647 2 Claims

1. A method of preparing blood solids from fresh blood for mixture with raw offal to make meat meal for animal feed comprising:

a. charging blood and water into a gelatinizer, then

b. gelatinizing the blood by

(i) adding live steam, and

(ii) adding heat, thereafter

c. closing all outlets on the gelatinizer, then

d. opening an exit valve of the gelatinizer, then

e. injecting steam into the gelatinizer, thus increasing pressure in the gelatinizer until the gelatinous mass is forced through a blow pipe and thus force feeding an auger press, therein

f. augering the gelatinous mass through a perforated cylinder,

g. squeezing at least 50% of the moisture therefrom,

h. exerting greater pressure on the gelatinous mass during the latter stages of augering than during the first,

j. separating the gelatinous mass from the liquid,

k. removing the gelatinous mass from the press, and

m. transporting said gelatinous mass from the press to an offal cooker.

4,219,587

PROCESS FOR PRODUCING PIGMENT-COATED PHOSPHORS

Yoichi Oba, Hachioji; Tsuyoshi Kano, Higashiyamato; Masaaki Hayashi, Kamakura; Hiroshi Takada, Yokohama; Katuzo Kanda, Oisomachi, and Shusaku Eguchi, Minami-ashigara, all of Japan, assignors to Hitachi, Ltd. and Kasei Optonix, Ltd., both of, Japan

Filed Dec. 19, 1977, Ser. No. 862,156
Claims priority, application Japan, Dec. 20, 1976, 51-151988
Int. Cl.[2] B05D *5/06, 5/12*
U.S. Cl. 427—64 13 Claims

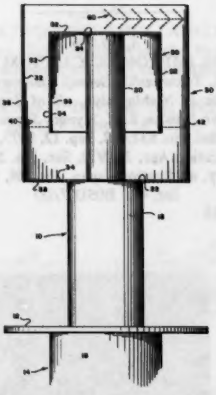
1. A process for producing a pigment-coated phosphor which comprises the first step of adding a pigment and an anionic polymer emulsion to an aqueous suspension of a phosphor to form a mixture and the second step of carrying out the step of adding a cationic polymer emulsion to the said mixture and making the resulting mixture weakly acidic by adjusting the pH to a value ranging from 6 to 4.

4,219,588

METHOD FOR COATING CRYOPUMPING APPARATUS

Raiph C. Longsworth, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 797,282, May 16, 1977, Pat. No. 4,150,549.
This application Jan. 12, 1979, Ser. No. 2,830
Int. Cl.[2] F17C *7/02*
U.S. Cl. 427—160 3 Claims



1. A method of improving a cryopumping apparatus containing a plurality of surfaces cooled to various sub-ambient temperatures to remove unwanted gases from a vacuum environment by having said vacuum environment pass said sur-

faces in order of descending temperature, comprising the steps of:

(a) removing all chevron baffles from said cryopumping apparatus; and

(b) coating only that portion of the surface facing the surface at the lowest temperature coated with a cryosorbent used to cryopump helium, hydrogen and neon with a radiant energy absorbing material, whereby said radiation absorbent layer absorbs incident radiation of about 300° K., which would be reflected onto the cryosorbent layer to protect the cryosorbent layer from excessive heat loads so that helium, hydrogen, and neon are pumped at higher speeds.

4,219,589
PROCESS FOR UREA GRANULATION

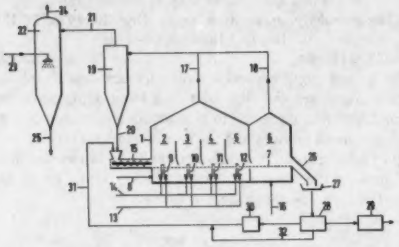
Anton Niks, Sledderlo bij Genk; Willy H. P. Van Hijfte, Assenede, and Rafaël A. J. Goethals, Ertvelde, all of Belgium, assignors to Compagnie Neerlandaise de l'Azote, Brussels, Belgium

Filed May 22, 1978, Ser. No. 908,512

Claims priority, application United Kingdom, Jun. 9, 1977, 24160/77; Apr. 19, 1978, 15529/78

Int. Cl.² B05D *1/12, 3/02*

U.S. Cl. 427—213 **11 Claims**



1. A process for producing urea granules, characterized by spraying an aqueous solution consisting essentially of urea having a urea concentration of 70–99.9% by weight onto fluidized urea nuclei in the form of droplets having a mean drop diameter of 20–120 μm at a temperature at which the water is evaporated from the solution sprayed onto the nuclei, and urea crystallizes on the nuclei, to form granules having a desired size.

4,219,590
METHOD FOR IMPROVING CALCIUM CARBONATE

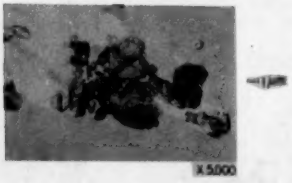
Hiroji Shibazaki, Takarazuka; Setsuji Edagawa, and Yoshinaga Okamoto, both of Nishinomiya, all of Japan, assignors to Shiraishi Kogyo Kaisha, Ltd., Hyogo, Japan

Continuation of Ser. No. 832,608, Sep. 12, 1977, abandoned. This application Apr. 2, 1979, Ser. No. 26,193

Claims priority, application Japan, Jan. 20, 1977, 52-5663

Int. Cl.² B05D *7/00*

U.S. Cl. 427—215 **5 Claims**



1. A method for the coating of calcium carbonate particles having an average diameter of not more than 20 μm with an inoganic acid vapor to form a calcium salt of said acid on the surface of said particle to produce more uniform particles of reduced average particle diameter and increased average particle surface area which comprises reacting said calcium carbonate particles with a vapor of said acid, the water content of the acid vapor being below 0.1% by weight.

4,219,591
PROCESS FOR COATING AN INORGANIC SILICATIC SUBSTRATE

Robert Buning, Troisdorf-Sieglar, and Gerhard Bier, Troisdorf, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

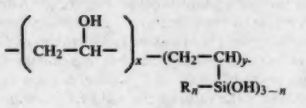
Continuation of Ser. No. 695,222, Jun. 11, 1976, Pat. No. 4,097,436, which is a continuation of Ser. No. 558,505, Mar. 14, 1975, abandoned. This application Apr. 18, 1978, Ser. No. 897,898

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1977, 2412292

Int. Cl.² B05D *1/00*

U.S. Cl. 427—387 **4 Claims**

1. A process for coating an inorganic silicatic substrate which comprises contacting said substrate with an aqueous acidic solution of a copolymer which forms a water insoluble film which copolymer is a copolymer of vinyl acetate and a vinyl alkoxysilane, wherein the alkoxy groups of said vinyl alkoxysilane are in a completely saponified form and the acetyl groups of said vinyl acetate are at least partially saponified, said polymer having repeating units of the formula



wherein

R is hydrogen, aryl, cycloalkyl or branched or unbranched saturated alkyl of 1 to 18 carbon atoms;

n is 0 to 2;

x is a whole number more than 1 to 2,000;

y is a whole number more than 1 to 2,000 and thereafter removing water therefrom.

4,219,592
TWO-WAY SURFACING PROCESS BY FUSION WELDING

David W. Anderson, Palm Beach Gardens, Fla.; William H. King, Higganum, and David R. Malley, Manchester, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 731,410, Oct. 12, 1976, abandoned. This application Jul. 11, 1977, Ser. No. 814,590

Int. Cl.² B05D *1/36, 7/00*

U.S. Cl. 427—405 **12 Claims**

1. A fusion welding method for applying protective surface

layers to crack prone superalloy substrates including the steps of:

a. using a fusion welding process to apply an intermediate layer of a crack resistant alloy consisting essentially of 14–22% Cr, 5–15% Co, 0–8% Mo, 0–5% Fe, 0.7–3% Al, 0.5–4% Ti, 0–6% (Ta+Cb), 0.5–3% Mn, 0–0.1% C, 0–0.05% B, 0–0.1% Zr, (Al+Ti) in excess of 3%, balance essentially Ni;

b. using a fusion welding process to apply the desired protective surface layer on the intermediate layer;

whereby the crack resistant intermediate layer essentially eliminates weld cracking in both the substrate and the surface layer.

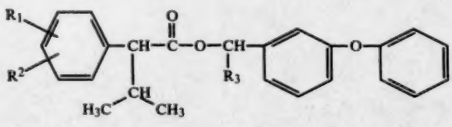
4,219,593

METHOD OF PROTECTING KERATINOUS MATERIAL FROM ATTACK BY INSECTS THAT FEED ON KERATIN

René Muntwyler, Hofstetten, and Bernardo de Sousa, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 25, 1979, Ser. No. 51,555
Claims priority, application Switzerland, Jul. 6, 1978, 7381/78
Int. Cl.[2] B22B *9/02*
U.S. Cl. 428—15 17 Claims

1. A method of protecting keratinous material from attack by insects that feed on keratin and from feeding damage, which comprises treating the material to be protected with compounds of the formula



wherein each of R_1 and R_2 independently represents hydrogen, fluorine, chlorine, bromine, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms, or R_1 and R_2 in the ortho-position to each other together represent the methylenedioxy radical, and R_3 represents hydrogen, cyano, —C≡CH or —C=CH$_2$.

4,219,594

MAGNETIC ARTIFICIAL TREE ORNAMENT

Tirso R. Herrera-Cabello, 7326 W. 18 Ave., Hialeah, Fla. 33012

Continuation of Ser. No. 814,313, Jul. 11, 1977, abandoned. This application Feb. 1, 1979, Ser. No. 8,377
Int. Cl.[2] A47G *33/06*
U.S. Cl. 428—18 1 Claim

1. An ornamental artificial Christmas tree comprising an artificial tree trunk,

an artificial branch extending from said trunk,

a simulated stem carrying artificial pine needles supported by said branch at a location spaced from said trunk,

said stem having a lower portion provided with a first member of magnetic material extending through and below an opening in said branch,

an ornament for said tree having a second member of magnetic material,

said first and second members being in engagement,

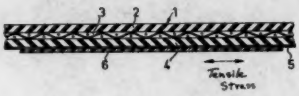
one of said members comprising a permanent magnet for readily detachably suspending said ornament from said lower portion of the stem.

4,219,595

PRINTING BLANKET AND METHOD OF MAKING SAME

Günter Spöning, Northeim, Fed. Rep. of Germany, assignor to Continental Gummi-Werke Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed May 26, 1978, Ser. No. 910,015
Claims priority, application Fed. Rep. of Germany, May 27, 1977, 2723993
Int. Cl.[2] B32B *1/00*
U.S. Cl. 428—40 4 Claims



1. In combination: an adhesive printing blanket made for application subsequently on a printing cylinder and comprising a first section having a longitudinal direction and

an adhesive layer on said first section; and

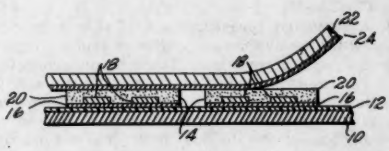
a foil-like elastically flexible protective layer removably connected to that side of said adhesive layer which is remote from said first section, said protective layer being under tensile stress in the longitudinal direction and being provided for transporting as well as storage thereof after production subject to removal of said protective layer prior to application of said first section of the adhesive printing blanket upon the printing cylinder, said protective layer having absolutely no direct influence upon the printing blanket during subsequent printing operation itself though protecting the printing blanket in undamaged and undeformed condition for actual use thereof.

4,219,596

MATRIX FREE THIN LABELS

Shiro G. Takemoto, Glendora, and Yukihiko Sasaki, Claremont, both of Calif., assignors to Avery International Corporation, San Marino, Calif.

Filed Nov. 7, 1977, Ser. No. 849,235
Int. Cl.[2] B32B *3/10, 27/16*
U.S. Cl. 428—41 10 Claims



1. A label construction comprising:

a temporary carrier having a release surface;

a label releasably adhered to the release surface, the label comprising a face film in contact with the release surface and a layer of pressure sensitive adhesive on the side of the face film opposite the carrier and substantially in register

with the face film, the face film comprising a radiation-cured polymer; and

a protective backing having a release surface in contact with the adhesive layer, the adhesion between the adhesive and the release surface of the protective backing being weaker than the adhesion between the face film and the release surface of the carrier, whereby the protective backing can be removed from such a label to expose the layer of adhesive while leaving the label releasably adhered to the carrier.

4,219,597

THREE-DIMENSIONAL, MULTI-DIRECTIONAL STRUCTURE

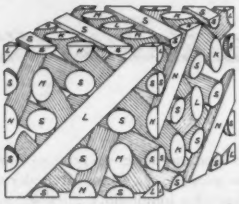
Michel Maistre, Bordeaux, France, assignor to Societe Europeene de Propulsion, France

Filed Mar. 20, 1979, Ser. No. 22,171

Claims priority, application France, May 5, 1978, 78 13415

Int. Cl.[2] B32B *5/12*

U.S. Cl. 428—105 **17 Claims**



1. A multi-directional structure comprising more than four bundles each constituted by a plurality of regularly spaced, parallel, rectilinear elements, the directions of at least five of said bundles being oriented parallel to at least five of the ten directions defined by the lines connecting the non-contiguous vertexes of a parallelepiped in two's and the bundles taken in three's not constituting a system in which each bundle is perpendicular to the other two.

4,219,598

MOLDED ARTICLE, THE METHOD FOR MANUFACTURING THE SAME AND THE DIES THEREFOR

Kouichi Noma, Kenoshinmachi; Tsutomu Umeda, Ootsukimachi, and Tsuneo Ogushi, Tsunatorimachi, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi and Tokyo Sanyo Electric Co., Ltd., Gunma Prefecture, both of, Japan

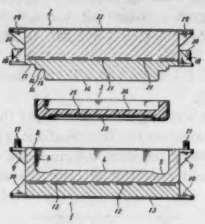
Continuation of Ser. No. 601,590, Aug. 4, 1975, abandoned. This application Oct. 18, 1977, Ser. No. 843,238

Claims priority, application Japan, Aug. 6, 1974, 49-90432; Aug. 6, 1974, 49-90433; Aug. 13, 1974, 49-92920; Aug. 13, 1974, 49-92921; Dec. 18, 1974, 49-146058

Int. Cl.[2] B32B *27/12*

U.S. Cl. 428—161 **4 Claims**

1. A monolithic ornamental molded shaped three-dimensional article which simulates marble or granite comprising a shaped transparent cover layer of thermosetting synthetic resin defining a continuous multiplanar shaped decorative surface, a structural base layer including an integrally formed thermosetting synthetic resin body having a continuous shaped surface generally conforming to and underlying said multiplanar shaped decorative surface and an intermediate layer disposed between and bonded to said shaped cover layer and said shaped base layer, said intermediate layer comprising a flaccid non-woven fabric sheet having a density of between about 10 and 30 grams/meter^2 and being provided with a multicolored pattern thereon, one of said colors being a background color, said structural base layer being substantially the same color as said background color, said structural base layer having a thickness substantially greater than the thickness of said shaped transparent cover layer whereby said ornamental molded



article is shaped through its cross-section and constitutes a structural supportive article having a shaped multiplanar decorative surface.

4,219,599

I.D. CARDS

Elbert M. Idelson, West Newton; Thomas Raphael, Winchester, and Herbert N. Schlein, Beverly, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 755,682, Dec. 30, 1976, Pat. No. 4,151,667. This application Mar. 19, 1979, Ser. No. 21,579

Int. Cl.[2] B32B *3/00, 5/16;* **G09F** *3/02*

U.S. Cl. 428—195 **15 Claims**

1. A protective laminar assembly for lamination to an information-bearing document, said assembly comprising a plastic sheet material having an adherent capability and a verification pattern of phosphorescent material integrated with said sheet material or said adherent capability.

4,219,600

MOISTURIZING MAT AND PROCESS FOR MAKING THE SAME

Philip Surowitz, Middlesex, and William L. Wetzel, Piscataway, both of N.J., assignors to Chicopee, New Brunswick, N.J.

Filed Jan. 8, 1979, Ser. No. 1,801

Int. Cl.[2] A01G *7/00;* **B32B** *5/26, 7/14, 27/14*

U.S. Cl. 428—196 **10 Claims**

1. A moisturizing mat suitable for use as base to promote trickle watering of plants which comprises a first layer of wood pulp fibers contained between a second fibrous facing layer and a third fibrous backing layer, said first, second, and third layers being bonded to form a coherent fibrous layer, and a layer of water-impervious plastic film bonded to said coherent fibrous layer on the surface formed by said third fibrous backing layer.

7. Process for producing a moisturizing mat suitable for use as a base to promote trickle watering of plants which comprises the steps of:

(a) depositing individualized wood pulp fibers on a first fibrous layer to form a first web having wood pulp fibers on one surface and said first fibrous layer on the other surface;

(b) placing a second fibrous layer on said one surface of said first web to form a second web;

(c) bonding said second web to form a coherent fibrous layer; and

(d) bonding a water-impervious plastic film to one surface of said coherent fibrous layer.

4,219,601

RUBBER REINFORCING MEMBER AND A METHOD OF MANUFACTURING THE SAME

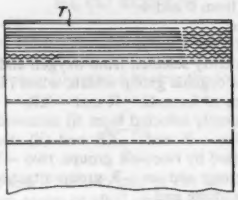
Osamu Inoue; Masaru Abe, both of Sayama; Koji Chiba, Higashiyamato, and Isao Miyoshi, Kodaira, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Oct. 23, 1978, Ser. No. 954,029

Claims priority, application Japan, Oct. 28, 1977, 52-128744

Int. Cl.[2] D03D *13/00;* D02G *3/00;* B32B *31/00;* B29C *19/00*

U.S. Cl. 428—222 9 Claims



1. A rubber reinforcing member comprising; a number of filamentous elements each formed of a metal or a material having a tensile breaking strength of at least 140 kg/mm^2 and arranged in parallel with each other, said filamentous elements being embedded in rubber, at least one end portion of the filamentous element is formed into a helix thereby having an axial compression modulus of elasticity smaller than that of the remaining central portion thereof.

5. A method of manufacturing a rubber reinforcing member, comprising the steps of:

(a) intermittently forming a helix in a filamentous element formed of a metal or a material having a tensile breaking strength of at least 140 kg/mm^2 and composed of two portions having different axial compression modulus of elasticity while feeding a number of the filamentous elements in a parallel arrangement;

(b) embedding the filamentous elements in rubber to form a rubberized fabric; and

(c) cutting the rubberized fabric at a position corresponding to the helical portion of the filamentous element having a smaller compression modulus of elasticity to produce strips of a rubber reinforcing member.

4,219,602

ELECTRICALLY CONDUCTIVE/ANTISTATIC SHEETING

Christine Conklin, Newark, N.J., assignor to Herculite Protective Fabrics Corporation, New York, N.Y.

Filed Apr. 29, 1976, Ser. No. 681,643

The portion of the term of this patent subsequent to Jun. 24, 1992, has been disclaimed.

Int. Cl.[2] B32B *5/16*

U.S. Cl. 428—244 38 Claims

1. A flexible sheeting having conductivity and a surface resistivity of less than 10^6 ohms on one surface thereof, comprising:

a first layer of a rubber composition filled with from about 25 to about 40 percent by weight of an electrically conductive filler selected from the group consisting of carbon black, powdered metal and mixtures thereof, the percent by weight of said electrically conductive filler being based on the total weight of the rubber and the electrically conductive filler in said composition; and

a second layer of a plastic film material which, prior to incorporation in said sheeting, has a surface resistivity of at least 10^6 ohms and which is bonded to said first layer.

4,219,603

BITUMINOUS ROOFING AND SEALING WEB WITH FIBER CONTAINING INSERT

Dieter Thun, Elmshorn, Fed. Rep. of Germany, assignor to Ruberoidwerke Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Filed Jul. 24, 1978, Ser. No. 927,262

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1977, 2734004

Int. Cl.[2] B32B *7/00*

U.S. Cl. 428—246 2 Claims

1. A bituminous roofing and sealing web with a fiber containing insert, wherein said insert comprises a woven layer of fabric which is produced from a mixture of glass or mineral fibers and organic synthetic fibers wherein each individual thread of the fabric is a multifilament thread and is formed of a mixture of glass or mineral fibers and organic synthetic fibers.

4,219,604

METHOD OF FORMING MICROCAPSULES, MICROCAPSULAR DISPERSION, AND PRESSURE SENSITIVE RECORDING SHEET

Fujio Kakimi; Yoshiyuki Hoshi, and Keiso Saeki, all of Fujinomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Minamiashigara, Japan

Filed Dec. 18, 1978, Ser. No. 970,593

Claims priority, application Japan, Dec. 20, 1977, 52-153430

Int. Cl.[2] B01J *13/02;* B32B *3/26*

U.S. Cl. 428—307 8 Claims

1. A method of forming microcapsules which comprises polymerizing a urea and formaldehyde resin capsule wall around individual droplets of a hydrophobic oily solution in the presence of carboxylated polyvinyl alcohol, wherein said carboxylated polyvinyl alcohol has a molecular weight of 1,000 to about 300,000, a saponification degree of 50% or more, a carboxy group content of 1 to about 40 mol %, and is present in the polymerization system in an amount of 0.5 to 10% by weight based on the weight of the system.

7. A pressure sensitive recording sheet comprising a support having coated thereon a layer of microcapsules prepared by polymerizing a urea and formaldehyde resin around individual droplets of a hydrophobic oily solution in the presence of carboxylated polyvinyl alcohol wherein said carboxylated polyvinyl alcohol has a molecular weight of 1,000 to about 300,000, a saponification degree of 50% or more, a carboxy group content of 1 to about 40 mol%, and is present in the polymerization system in an amount of 0.5 to 10% by weight based on the weight of the system.

4,219,605

PROCESS FOR FLAMEPROOFING SYNTHETIC FIBRE MATERIAL AND PRODUCT

Peter Rohringer, Schönenbuch, Switzerland, assignor to CIBA-GEIGY Corporation, Ardsley, N.Y.

Filed Sep. 19, 1977, Ser. No. 834,344

Claims priority, application Switzerland, Sep. 29, 1976, 12300/76

Int. Cl.[2] D02G *3/02;* B05D *3/02*

U.S. Cl. 428—361 12 Claims

1. A process for flameproofing organic synthetic fibre material, which comprises applying to said material (a) a flameproofing agent which contains a brominated cycloalkane having 7 to 12 ring carbon atoms and 4 to 6 bromine atoms bnded to these ring carbon atoms, and (b) a stabilizer which contains

a monomeric or polymeric organo-tin compound of the formula

in which R_1 is an aliphatic, cycloaliphatic or aromatic hydrocarbon radical, Y_1 is an aliphatic hydrocarbon radical bonded via an —O— or —OOC— bridge, or is of the formula —S—X_1, in which X_1 is an aliphatic or aromatic hydrocarbon radical, and Z_1 and Q_1 in each case have the meanings defined for R_1 or Y_1, or Y_1 and Z_1 together are =S or =O or are a divalent organic radical which, together with the Sn atom, forms a heterocyclic ring, the ring having an —S—, —O— or —OOC— bridge in the position adjacent to the Sn atom, or, if the organo-tin compound is in the polymeric form, Q_1 is also hydroxyl and Y_1 and Z_1 together are an —S— or —O— bridge which is bonded to different Sn atoms, or, if Y_1 and Z_1 togther are =S, Q_1 is also —SH, and subjecting the fibre material treated in this way to a heat treatment.

4,219,606

CHEMICAL COMPOSITION FOR THE COATING OF ELECTRODES FOR MANUAL ARC WELDING

Ariel G. Ojeda, 260, Calzada St., Vedado, Havana, Cuba

Filed Nov. 29, 1978, Ser. No. 965,307

Int. Cl.[2] **B32B** *15/04;* **C08L** *1/00, 5/00*

U.S. Cl. 428—386 **2 Claims**

1. A composition for coating of welding electrodes consisting essentially of, by weight, 6–20% cane bagasse, 10–15% potassic feldspar, 40–50% rutile concentrate, 8–12% calcium carbonate, 10–12% ferromanganese and 10–13% potassic mica, wherein the potassic feldspar has the following composition:

SiO_2	65–75%
Al_2O_3	10–15%
Fe_2O_3	1–2%
CaO	1–1.5%
Na_2O	4–10%
K_2O	4–12%
TiO_2	1–3%

4,219,607

HIGH VOLTAGE INSULATING COMPOSITIONS CONTAINING PHOSPHORUS COMPOUNDS

Travers K. Cammack, II, Bartlesville, Okla., and David D. Nyberg, Sunnyvale, Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 649,797, Jan. 16, 1976, Pat. No. 4,100,089. This application Jan. 13, 1978, Ser. No. 869,244

The portion of the term of this patent subsequent to Jul. 7, 1995, has been disclaimed.

Int. Cl.[2] **H01B** *3/00, 3/30*

U.S. Cl. 428—411 **34 Claims**

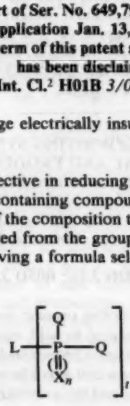
1. A high voltage electrically insulating composition comprising

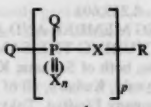
(1) a polymer;

(2) an additive effective in reducing tracking; and

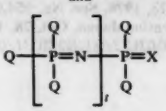
(3) a phosphorus-containing compound effective in improving the resistance of the composition to erosion by high voltage stress and selected from the group consisting of

(a) compounds having a formula selected from



(I)

(II)

and



(III)

wherein

n is selected from 0 and 1;

t is an integer;

p is integer greater than 1;

X is independently selected from oxygen and sulphur;

L is a t-valent organic group which, when t is 1, is selected from groups of formula —R and —XR;

Q is independently selected from (i) monovalent groups of the formulae —R and —XR and (ii) divalent organic groups formed by two —R groups, two —XR groups, or an —XR group and an —R group attached to the same phosphorus atom; and

R is independently selected from

(i) a hydrogen atom;

(ii) an aryl group;

(iii) a substituted aryl group;

(iv) an alkyl group; and

(v) an alkyl group substituted by at least one group, each of said substituted groups consisting of at least one atom selected from carbon, hydrogen, fluorine, chlorine, oxygen, sulphur, nitrogen, phosphorus and silicon; subject to the provisos that

(1) when n is 1, and each of the Q groups is an —XR group, and at least two of the Q groups are O-alkyl or O-aralkyl groups, the molecular weight of the compound is at least 382;

(2) when n is O and each of the Q groups is an X-alkyl group, at least one of the X's is oxygen and the molecular weight of the compound is at least 442; and

(3) no phosphorus atom is directly bonded to more than two hydrogen atoms;

(b) salts of a compound as defined in (a) containing a salt-forming acidic group, the cation in said salt being selected from ammonium ions, quaternary ammonium ions and metal ions wherein the metal is a metal having an atomic number less than 56 and belonging to one of Groups 1A, IIA, IIB, IIIA, IIIB, IVA, IVB, VA, VB, VIA, VIIB and VIII of the Periodic Table;

(c) reaction products of at least one compound as defined in (a) and (b) with each other;

(d) reaction products of at least one compound as defined in (a) and (b) with said polymer (1); and

(e) reaction products of at least one compound as defined in (a) and (b) with said anti-tracking additive (2).

4,219,608

PIEZOELECTRIC CRYSTALLINE FILM OF ZINC OXIDE AND METHOD FOR MAKING SAME

Hiroshi Nishiyama, Mukou; Toshio Ogawa, and Tasuku Mashio, both of Nagaokakyo, all of Japan, assignors to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

Filed Sep. 14, 1978, Ser. No. 942,278

Claims priority, application Japan, Sep. 17, 1977, 52-111760; Sep. 22, 1977, 52-114180; Sep. 22, 1977, 52-114181

The portion of the term of this patent subsequent to Jan. 8, 1997, has been disclaimed.

Int. Cl.[2] **C23C** *15/00;* **C04B** *35/00*

U.S. Cl. 428—411 **5 Claims**

3. A piezoelectric crystalline film disposed on a substrate, said film consisting essentially of a crystalline zinc oxide film with a hexagonal crystal structure and a c-axis substantially perpendicular to the substrate surface, said crystalline zinc

oxide film containing 0.01 to 20.0 atomic percent of sulphur.

4. A piezoelectric crystalline film disposed on a substrate, said film consisting essentially of a crystalline zinc oxide film with a hexagonal crystal structure and a c-axis substantially perpendicular to the substrate surface, said crystalline zinc oxide film containing 0.01 to 20.0 atomic percent of tellurium.

4,219,609

MINERAL PRODUCTS

Colin S. Cundy, Corporate Laboratory, The Heath, Runcorn, Cheshire, England

Filed Mar. 24, 1978, Ser. No. 889,924

Claims priority, application United Kingdom, Apr. 6, 1977, 14551/77

Int. Cl.² B32B 9/04

U.S. Cl. 428—446 **6 Claims**

1. A process for the stabilization to water of a vermiculite article consisting essentially of contacting the article with the vapor of a nitrogen compound having the formula:

where R1, R2 and R3 which may be the same or different are either hydrogen atoms or alkyl groups containing up to seven carbon atoms, provided that where R2 and R3 are both hydrogen atoms, R1 is an alkyl group containing less than three or seven carbon atoms.

4,219,610

TREATMENT OF MAGNETIC GARNET FILM

Donald L. Murrell, Ipswich, England, assignor to The Post Office, London, England

Filed May 23, 1978, Ser. No. 911,057

Claims priority, application United Kingdom, May 25, 1977, 22048/77

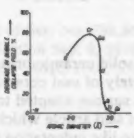
Int. Cl.² B05D 5/12

U.S. Cl. 428—469 **12 Claims**

1. A method for treating a liquid phase grown epitaxial film of a garnet containing gallium to reduce the bias field required to collapse its magnetic domains, the method including

depositing on to the garnet film after its formation a thin film of an element other than silicon, which element has an atomic diameter greater than that of boron and less than that of aluminium and has an affinity for oxygen greater than that of iron, and then

diffusing some of the said element into the film by heating it to a temperature between 500° C. and 800° C.



11. A magnetic bubble memory device including an epitaxial garnet film having at least one first region and at least one second region, each first region having been treated by a method according to any one of claims 1 or 9, so that for a particular range of magnetic bias field strengths magnetic bubbles can only exist in the second region or regions.

4,219,611

FUEL CELL ELECTROLYTE RESERVOIR LAYER AND METHOD FOR MAKING

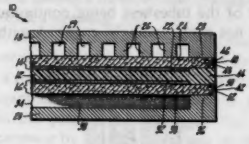
Richard D. Breault, Coventry, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 941,825, Sep. 11, 1978. This application Jul. 30, 1979, Ser. No. 62,098

Int. Cl.² H01M 2/14

U.S. Cl. 429—13 **7 Claims**

1. A method for increasing the length of time a hydrophilic, porous graphite body remains hydrophilic when used as a reservoir layer for accommodating electrolyte volume changes



within a phosphoric acid fuel cell comprising the steps of:

coating the pore surfaces of said graphite body with particulate, wettable, amorphous carbon.

4,219,612

VENTED FILLING PLUGS FOR ELECTRIC STORAGE CELLS

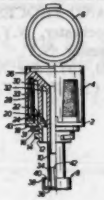
Edwin Tatlock, Bolton, England, assignor to Chloride Group Limited, London, England

Filed Mar. 14, 1979, Ser. No. 20,510

Claims priority, application United Kingdom, Mar. 15, 1978, 10285/78

Int. Cl.² H01M 2/12

U.S. Cl. 429—86 **4 Claims**



1. A vented filling plug for an electric storage cell intended to be filled to a normal working level with liquid electrolyte, said plug comprising:

means defining a vent path through which gas may enter or leave the cell, said vent path including a flame trap and arranged so as, in use, to communicate with the interior of said cell at a point above normal electrolyte level;

means defining a filling path through which electrolyte may be poured into said cell, said filling path being arranged so as, in use, to communicate with the interior of said cell at a point below said normal electrolyte level; and

means defining a liquid trap in said filling path, said liquid trap being positioned so as, in use, to be below said normal electrolyte level, and being so constructed and arranged that if said electrolyte is allowed to fall below the level at which said filling path communicates with the interior of said cell, said liquid trap is left at least partially filled with said electrolyte.

4,219,613

HELIUM-TIGHT TUBESHEET FOR HOLLOW FIBER TYPE BATTERY CELLS AND METHOD OF FABRICATING THE SAME

Joginder N. Anand, Clayton; Timothy T. Revak, Concord, and Floris Y. Tsang, Walnut Creek, all of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 16, 1979, Ser. No. 12,637

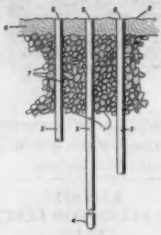
Int. Cl.² H01M 4/36

U.S. Cl. 429—104 **4 Claims**

1. A helium-tight tubesheet/fiber assembly comprising a ceramic tubesheet which has first and second generally opposed faces and is pierced by a plurality of inorganic hollow fibers having closed-ended sections extending from said first face and open ends terminating in or beyond said second face,

the portion of said tubesheet subjacent to and defining said second face being non-porous and sealingly engaged with the fibers,

the remainder of the tubesheet being contiguous with said portion but not itself sealingly engaged with the fibers,



and consisting essentially of sintered particles having the same chemical composition as said portion, and

the coefficient of thermal expansion of said ceramic material differing from the coefficient for the fiber material by not more than 20×10^{-7}/°C.

4,219,614

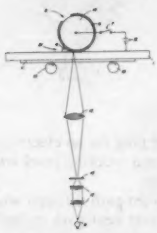
ELECTROPHORETIC MIGRATION IMAGING COMPOSITION AND PROCESS USING SAME

Frederick A. Stahly, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 29, 1977, Ser. No. 837,779

Int. Cl.² G03G *17/04*

U.S. Cl. 430—38 **19 Claims**



1. In an electrophoretic migration imaging composition comprising a mixture of an electrically photosensitive particulate material containing at least one dye or pigment colorant and an electrically insulating carrier vehicle, the improvement wherein there is incorporated in said composition a polymeric charge control agent comprising a copolymer having at least two different repeating units,

(a) one of said units being present in an amount of at least about 0.5×10^{-4} moles/gram of said copolymer and being derived from monomers selected from the group consisting of metal salts of sulfo acrylates and methacrylates and metal salts of acrylic and methacrylic acids, and

(b) one of said repeating units being derived from monomers soluble in said carrier vehicle and being present in an amount sufficient to render said copolymer dispersible in said carrier vehicle.

4,219,615

COLOR INTENSIFICATION PROCESS FOR SOUND IMAGES

Tadao Sakai, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Division of Ser. No. 695,715, Jun. 14, 1976, abandoned. This application Feb. 24, 1978, Ser. No. 880,745

Claims priority, application Japan, Jun. 12, 1975, 50-71138

Int. Cl.² G03C *7/24*

U.S. Cl. 430—140 **12 Claims**

1. A process for forming picture and sound images on a multilayer color photographic material which comprises exposing a multilayer color photographic material comprising a support carrying thereon, in succession, a blue sensitive silver halide emulsion layer containing a yellow dye forming color coupler in at least 40 mol% excess of the stoichiometric amount of the coupler to the silver halide in the emulsion layer, a red sensitive silver halide emulsion layer containing a cyan dye forming color coupler in at least 40 mol% excess of the stoichiometric amount of the coupler to the silver halide in the emulsion layer, and a green sensitive silver halide emulsion layer containing a magenta dye forming coupler in an amount less than 40 mol% excess of the stoichiometric amount of the coupler to the silver halide in the emulsion layer in that order, and thereafter developing picture and sound images on said photographic material using said three emulsion layers, by a color intensification development.

4,219,616

RECORDING MATERIALS FOR VESICULAR IMAGING

John A. Pope, Colchester; Stuart C. Rennison, Hadleigh, and Ronald J. Stacey, Colchester, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Nov. 20, 1978, Ser. No. 962,483

Claims priority, application United Kingdom, Nov. 29, 1977, 49609/77; Sep. 1, 1978, 35306/78

Int. Cl.² G93C *1/58, 1/52*

U.S. Cl. 430—152 **12 Claims**

1. A recording material suitable for vesicular imaging, which consists essentially of a polymeric vehicle and dispersed uniformly therein a sensitising agent which releases a vesicle-forming gas upon exposure to light so as to provide a latent gas image in the polymeric vehicle, said polymeric vehicle consisting of a polyelectrolyte having a nitrogen permeability constant in the range 1×10^{-17} to 1×10^{-10} and being softenable upon heating to permit the gas released by the sensitising agent in the light-struck areas to form light-scattering or reflecting vesicles therein.

4,219,617

CERAMIC ORTHODONTIC BRACKET

Melvin Wallshein, 8645 Bay Pkwy., Brooklyn, N.Y. 11214

Filed Aug. 9, 1978, Ser. No. 932,290

Int. Cl.³ A61C *7/00*

U.S. Cl. 433—8 **29 Claims**

1. A substantially solid ceramic orthodontic bracket formed substantially completely of said ceramic, comprising a shaped article having a first surface adapted to be affixed to a surface of a tooth, the side of said article which is opposed to said first surface have a groove-like indentation therein for receiving an arch wire or the like, the article further comprising at least two outwardly extending lugs which extend from opposite side surfaces of said article, said ceramic being substantially white in color and having a tensile strength of at least about 15,000 psi, a modulus of elasticity in excess of about 15×10^6 psi, a Charpy impact resistance of at least about 5, and a hardness of at least about 9 on the Mohs scale.

4,219,618

DENTAL HAND TOOL HOLDER

Henri Leonard, Besancon, France, assignor to Micro-Mega S.A., Besancon, France

Filed Jan. 5, 1978, Ser. No. 867,100

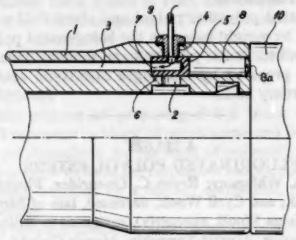
Claims priority, application France, Jan. 28, 1977, 77 02946; Mar. 18, 1977, 77 08749

Int. Cl.² A61G *17/02*

U.S. Cl. 433—80 **16 Claims**

1. A dental handpiece comprising an elongated body having

a head adapted to receive a dental tool and a rear end adapted to be coupled to a driving unit, said body having a central bore for rotatably supporting a shaft connecting said tool with said driving unit, a chamber in a rear portion of said body, an outlet passage extending from said chamber to the head of said body for conducting cooling fluid to said head, an internal fluid inlet port opening from said chamber to the rear end face of said body for connection with a fluid supply conduit in said driving unit and an external fluid inlet port opening from said chamber to the peripheral outer surface of a rear end portion of said body for connection with an external fluid supply tube, and valve means in said chamber and movable between a first position in which said internal inlet portion is closed and said external inlet portion communicates with said outlet passage to supply cooling fluid to said head from an external supply tube,



and a second position in which said external inlet portion is closed and said internal inlet port communicates with said outlet passage to supply cooling fluid to said head from said fluid supply conduit of a driving unit, said external inlet port being aligned radially with said internal inlet port and said outlet passage opening into said chamber between said ports in a direction at right angles to an axis interconnecting said ports, and said valve member being a cylindrical member completely filling said chamber and having an elbow-shaped internal passage, said valve member being rotatable through 180° from the outside for causing said outlet passage to communicate via said elbow-shaped passage with either said internal inlet port or said external inlet port.

4,219,619

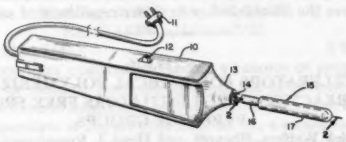
VIBRATING DENTAL INSTRUMENT FOR SETTING CROWNS

Merle C. Zarow, 13904 Fiji Way #342, Marina del Rey, Calif. 90291

Continuation-in-part of Ser. No. 798,561, May 16, 1977, abandoned. This application Sep. 8, 1978, Ser. No. 940,844

Int. Cl.[2] A61C *1/07, 3/03*

U.S. Cl. 433—118 **5 Claims**



1. A vibrating dental instrument for seating crowns wherein the inner, overlying surface of the crown is coated with cement and the prepared exposed surface of the patient's tooth to receive the crown is similarly coated with cement, comprising, in combination:

(a) a vibrator having a frequency of vibration of from 20–100 vibrations per second and having a nose coupling including a threaded opening subject to vibration when said vibrator is energized;

(b) a mandrel having a threaded end threadedly receivable in said threaded opening; and

(c) a removable bite probe having one end portion receivable over said mandrel and its opposite end portion receivable in a patient's mouth between said patient's tooth after said crown has been positioned thereon and the opposing tooth in the patient's mouth, such that the patient can apply pressure by biting on said bite probe, the vibrations imparted to said bite probe upon energization of said vibrator being communicated to said crown to work it into proper position over said tooth, after which said bite probe is retained between the patient's teeth and the vibrator pulled away from said one end portion of the bite probe so that the crown has an opportunity to set with pressure still being applied through said bite probe by the patient.

4,219,620

DENTINE PIN

Murray D. Carse, Queensway House, Hatfield, Hertfordshire AL10 0NR, England

Filed Mar. 6, 1978, Ser. No. 883,987

Claims priority, application United Kingdom, Mar. 11, 1977, 10502/77

Int. Cl.[2] A61C *5/04*

U.S. Cl. 433—225 **4 Claims**

1. A dentine pin for fitting in a standard dental handpiece having a rotatable cylindrical sleeve, the pin comprising a shank with a latching portion at one end and a threaded portion attached to the other end of the shank by a neck in which the diameter of the shank decreases from a region adjacent the latching portion towards the neck and threaded portion in such a manner that the threaded portion can oscillate with respect to the axis of the sleeve of the handpiece, changing the inclination of the axis of the threaded portion to the axis of the sleeve, said shank being tapered and having a semi-cone angle of no more than 3°.

4,219,621

STABILIZED THYMIDINE PHOSPHORYLASE PREPARATION AND CULTURE MEDIUM

Thomas A. Krenitsky, Chapel Hill, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Filed Jun. 13, 1978, Ser. No. 915,153

Claims priority, application United Kingdom, Jun. 14, 1977, 24665/77

Int. Cl.[2] C12Q *1/18;* C12N *9/12, 1/20*

U.S. Cl. 435—32 25 Claims

1. A thymidine phosphorylase preparation characterised in that the preparation also comprises uracil and an inorganic phosphate.

4,219,622

PROCESS FOR PRODUCING ANTIBIOTICS MA 144-M_1 AND MA 144-M_2

Hamao Umezawa; Tomio Takeuchi, both of Tokyo; Hiroshi Naganawa; Masaaki Ishizuka, both of Denenchohushi; Norio Shibamoto, Chigasakishi; Toshikazu Oki, Kamakurashi, and Taiji Inui, Chigasakishi, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

Division of Ser. No. 879,536, Feb. 21, 1978, which is a division of Ser. No. 780,730, Mar. 24, 1977, Pat. No. 4,144,329. This application Mar. 5, 1979, Ser. No. 17,525

Claims priority, application Japan, Apr. 7, 1976, 51/39688

Int. Cl.[2] C12P *19/56*

U.S. Cl. 435—78 10 Claims

1. A process for producing the antibiotic MA 144-M_1 which comprises incubating aclacinomycin A at a temperature in the range of 20° C. to 42° C. and at a pH from 5.5 to 10.5 in a medium containing an enzyme system capable of converting aclacinomycin A to MA 144-M_1 and a coenzyme, said enzyme system being obtained from mammalian tissue or from a MA 144 producing streptomyces and said coenzyme being nicotinamide adenine dinucleotide phosphate or the reduced form of nicotinamide adenine dinucleotide phosphate, and thereafter recovering the MA 144-M_1 from the reaction mixture in substantially purified form.

4,219,623

PHENOL FORMALDEHYDE RESIN FOAMS

Krishan K. Sudan, Laval, and Antoine Berchem, St. Hippolyte, both of Canada, assignors to Reichhold Limited, Islington, Canada

Filed Jun. 28, 1978, Ser. No. 919,972

Claims priority, application United Kingdom, Jul. 26, 1977, 31332/77; Dec. 12, 1977, 51631/77

Int. Cl.[2] C08J *9/04;* C08G *65/38*

U.S. Cl. 521—85 29 Claims

1. A method of making a phenol-formaldehyde resin foam which comprises:

(A) preparing a phenol-formaldehyde resin component by first mixing a phenol-formaldehyde resin with a surfactant, a nitrogenous modifier capable of permitting dispersion of a blowing agent in the resin, and a blowing agent; the surfactant, modifier, and blowing agent being added sequentially, and in the order given, to the resin, the completed mix then being aged before use;

(B) preparing a catalyst component by mixing together equal weights of a liquid polyhydroxy compound and an acid catalyst system; and

(C) optionally after a period of storage, mixing together the components prepared in (A) and (B) in the desired ratio to provide a phenol-formaldehyde resin foam.

16. A foamable composition comprising in admixture a first component and a second component, said first component comprising a phenol-formaldehyde resin, a blowing agent which is an inert, low boiling liquid, an effective amount of a nitrogenous modifier capable of permitting dispersion of the blowing agent in the resin, and a surfactant, and said second component comprising an acid catalyst dispersed in a liquid polyhydroxy compound, in a weight ratio of acid catalyst to polyhydroxy compound of at least 1:1.

4,219,624

STABILIZATION OF AMINE CATALYSTS IN A COMPOSITION WITH HALOGENATED POLYOLS FOR USE IN POLYURETHANE FOAM PRODUCTION

Stephen Fuzesi, Hamden, Conn., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 801,676, May 31, 1977, abandoned. This application Nov. 20, 1978, Ser. No. 962,537

Int. Cl.[2] C08G *41/00*

U.S. Cl. 521—171 15 Claims

1. A catalytically storage-stable halogenated polyol pre-mix formulation comprising

a halogenated polyether polyol and about 0.02 to about 5 percent by weight based on the halogenated polyol of an acid-blocked amine polyurethane foaming catalyst, said catalyst prepared by reacting a carboxylic acid with an alkyl tertiary amine.

4,219,625

FLUORINATED POLYOL ESTERS

Frank Mares, Whippany; Bryce C. Oxenrider, Florham Park, both of N.J., and Cyril Woolf, deceased, late of Morristown, N.J. (by Helga Woolf, executrix), assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 677,357, Apr. 15, 1976, abandoned, which is a continuation-in-part of Ser. No. 591,929, Jun. 30, 1975, abandoned. This application Dec. 16, 1977, Ser. No. 861,383

Int. Cl.[2] C07C *69/80, 69/82;* C08G *63/76*

U.S. Cl. 525—5 16 Claims

1. As an improved additive capable of imparting oil repellency and water repellency to polyethylene terephthalate fibers, a compound of the formula $[R(CH_2)_n—OOC—Ar—COO]_tY$, wherein:

"R" is a perfluorinated alkyl or alkoxyalkyl group of 2–20 carbon atoms;

"n" is 2–6;

"Ar" is an ortho- or para-phenylene radical;

"t" is 2–4;

"Y" is the residue of a polyol selected from the group consisting of ethylene glycol, hydroquinone, glycerol, pentaerythritol, $CH(CH_2OH)_3$, and $HOC(CH_2OH)_3$.

6. An improved polyethylene terephthalate fiber having incorporated into the fiber surface as an integral part of the fiber, an additive compound of claim 1; whereby the fiber displays oil repellency and water repellency.

11. Process of incorporating an additive of claim 1 into the fiber surface of a polyethylene terephthalate fiber as an integral part of the fiber, which comprises contacting said additive in liquid medium with said fiber and thereafter annealing the resulting fiber at temperature and time conditions sufficient to improve the oil repellency or water repellency of said fiber.

4,219,626

ACCELERATORS FOR RADICAL POLYMERIZATION REACTIONS WITH INITIATORS FREE FROM PEROXIDE GROUPS

Heinrich Wolfers, Rheurdt, and Hans J. Rosenkranz, Krefeld, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 845,564, Oct. 26, 1977, abandoned. This application Sep. 5, 1978, Ser. No. 939,342

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1976, 2650173

Int. Cl.[2] C08F *10/00, 20/06, 20/10;* C08L *67/06*

U.S. Cl. 525—23 3 Claims

1. In the process of initiating radically initiatable polymerization reactions with peroxide-group-free thermolabile initiators of the 1,2-diphenyl ethane type, the improvement comprises

accelerating said reactions by introducing into said reaction 0.01 to 2.0% by weight of an amine which does not decompose to radicals at temperatures below 250° C.; said amine being a compound selected from the group consisting of

(a) aromatic, acyclic and cyclic aliphatic, and aliphatic-aromatic primary, secondary and tertiary amines, or

(b) cyclic aliphatic secondary and tertiary amines containing a second hetero atom selected from oxygen, sulphur and nitrogen, with the provision that said amine contains no more than 24 carbon atoms.

4,219,627
PROCESS FOR THE PREPARATION OF BLOCK COPOLYMERS

Adel F. Halasa, Bath; James E. Hall, and Adolph Para, both of Akron, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Mar. 9, 1977, Ser. No. 776,047
Int. Cl. C08f *297/04*
U.S. Cl. 525—89 **12 Claims**

1. In the process of preparing S-B-S block copolymers, wherein S represents a block of polystyrene and B represents a block of polybutadiene, by the steps of polymerizing the individual monomers to form the respective blocks, such polymerizations being initiated by a lithium compound, the improvement whereby:

(a) said polymerization is initiated by a hydrocarbyl lithium compound having up to 10 carbon atoms,

(b) said polymerization is conducted in a solution of the same S-B-S block copolymer dissolved in a solvent consisting essentially of hexane, the amount of said copolymer comprising 0.1–10 parts by weight per 100 parts of styrene to be incorporated in the first S block of the S-B-S polymer to be formed;

(c) sufficient styrene is added to the said solution of S-B-S block copolymer in hexane to give the desired molecular weight of the first S block and thereafter effecting polymerization of said styrene to give the product polystyrene-Li while still dispersed in said hexane;

(d) thereafter adding an appropriate amount of butadiene to the dispersed product of step (a) to form a desired size block of polybutadiene and effecting polymerization of said butadiene with said polystyrene-Li to give the product polystyrene-polybutadiene-Li while still dispersed in said hexane, and

(e) thereafter effecting the addition of a second block of polystyrene onto said polystyrene-polybutadiene-Li.

4,219,628
MOLDING COMPOSITION FROM POLYESTER BLENDS

Doyle A. Weemes, Greeneville, and Robert W. Seymour, Kingsport, both of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 2, 1979, Ser. No. 26,482
Int. Cl.[2] C08L *23/16, 67/02*
U.S. Cl. 525—166 **5 Claims**

1. A polyester composition having a balance of properties suitable for molding purposes, said balance of properties including a flexural modulus of at least 200,000 psi, a heat deflection temperature at 264 psi of at least 50° C., a tensile strength of at least 5000 psi, a notched Izod impact strength at 23° C. of at least 0.7 foot-pounds per inch, an unnotched Izod impact strength at 23° C. of no break, and a Rockwell Hardness using the R scale of at least 90; said polyester composition comprising an admixture of

(A) from about 70 to about 90 percent by weight of a polyester having an inherent viscosity of about 0.5 to about 1.5, and selected from

(1) poly(tetramethylene terephthalate),

(2) poly(1,4-cyclohexylenedimethylene terephthalate), and

(3) poly(1,4-cyclohexylenedimethylene terephthalate) modified with up to about 10 percent by weight of poly(oxyethylene) glcyol having a molecular weight of about 500 to about 2000.

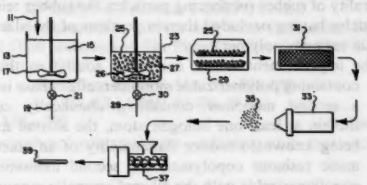
(B) from about 25 to about 5 percent by weight of poly(ethylene-co-propylene) rubber having a melt flow at 230° C. ranging from about 0.1 to about 20.0 grams/10 minutes, and

(C) from about 5 to about 25 percent by weight of an ionomer of poly(ethylene-co-acrylic acid) with about 50 percent of the acrylic acid converted to a metal salt and having a melt index at 190° C. ranging from about 3 to about 20 grams/10 minutes.

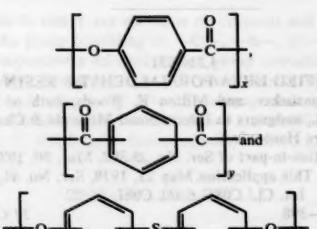
4,219,629
P-OXYBENZOYL COPOLYESTERS COMPRISING THIODIPHENOL COMPONENTS AND HAVING IMPROVED FLEXIBILITY AND SOLUBILITY IN ORGANIC SOLVENTS

Roger S. Storm, Williamsville, N.Y., assignor to Dart Industries Inc., Los Angeles, Calif.

Filed Nov. 9, 1978, Ser. No. 959,275
Int. Cl.[2] C08F *14/26;* C08G *63/02, 63/68;* C08L *67/04*
U.S. Cl. 525—167 **24 Claims**



1. A p-oxybenzoyl copolyester having a molecular weight in the range of 500 to 72,000, which is flexible and soluble in organic solvents and which comprises recurring moieties of the following formulas:



wherein y:z equals 0.1 to 10; x:z equals 0.1 to 10; x:y equals 0.9 to 1.1; x+y+z equals 20 to 600; the carbonyl groups of (B) are meta or para to each other; and the oxygen atoms of (C) are meta or para to the sulfur atom thereof.

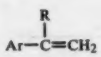
16. A scratch resistant polymeric coating on a substrate which comprises a p-oxybenzoyl copolyester of claim 1 and a polytetrafluoroethylene polymer in a proportion within the range of 1:10 to 1:1.

4,219,630
POLYMERIZATION PROCESS

Donald C. Rulf, and Edward F. Gurnee, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 678,281, Apr. 19, 1976, abandoned. This application Jun. 6, 1977, Ser. No. 803,928
Int. Cl.[2] C08F *279/06*
U.S. Cl. 525—243 **3 Claims**

1. In a process for the preparation of an impact-resistant alkenyl aromatic resinous polymer, the steps of the method comprising providing a solution consisting essentially of a monomer soluble rubber reinforcing agent in at least a partially polymerizable stream containing a hydrocarbon alkenyl aromatic monomer having the formula



wherein Ar represents an aromatic hydrocarbon radical of the benzene series, R is hydrogen or the methyl radical, subjecting the stream to polymerizing conditions, agitating and polymerizing monomer of the stream to thereby cause a rubber rich discontinous phase to separate within the stream as a plurality of small particles (phase inversion) having diameters within the range of from about 0.2 to 10 microns, the particles being visible using a phase contrast microscope having a magnifying power of between about 600 and 900 diameters maintaining polymerization conditions until at least a major portion of the monomer in the stream has been converted to polymer and subsequently recovering from the stream an impact-resistant alkenyl aromatic resinous polymer having dispersed thereon a plurality of rubber reinforcing particles, the rubber reinforcing particles having occluded therein portions of the alkenyl aromatic resinous polymer,

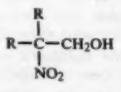
the improvement which comprises adding to the stream containing polymerizable monomer, after phase inversion, a second monomer containing chemically combined therein at least one halogen atom, the second monomer being known to reduce flammability of an alkenyl aromatic resinous copolymer, the second monomer being copolymerizable with the alkenyl aromatic monomer, the second monomer being added at a rate which is insufficient to destroy the visible rubber particles, the addition of the second monomer being completed prior to conversion of 90 percent of the alkenyl aromatic resinous monomer initially in the polymerizable stream to be polymerized.

4,219,631
MODIFIED UREA-FORMALDEHYDE RESIN

Jerry H. Hunsucker, and Milton E. Woods, both of Terre Haute, Ind., assignors to International Minerals & Chemical Corp., Terre Haute, Ind.

Continuation-in-part of Ser. No. 25,502, Mar. 30, 1979, abandoned. This application May 21, 1979, Ser. No. 41,119
Int. Cl.[2] C08G *6/00*; C08L *61/02*
U.S. Cl. 525—398 **27 Claims**

1. A resinous product comprising a curable ureaformaldehyde resin modified with from 0.25 to 3.0 moles of a nitroalkanol per mole of urea, said nitroalkanol being represented by the formula



where R is hydrogen, methyl, ethyl or hydroxymethyl.

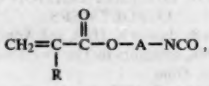
4,219,632
LOW MOLECULAR WEIGHT ISOCYANATO-ACRYLATE COPOLYMERS

John A. Simms, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 2, 1979, Ser. No. 17,073
Int. Cl.[2] C08F *4/04, 4/32, 226/00*
U.S. Cl. 526—218 **12 Claims**

1. The process of preparing a copolymer of controlled low molecular weight as measured by gel permeation chromatography of

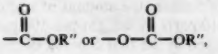
(1) at least one compound of the formula



wherein R is hydrogen or methyl and A is alkylene of 2–14 carbons, and

(2) at least one compound of the formula

wherein R′ is hydrogen or methyl and X is phenyl, tolyl, cyano,



R″ being alkyl of 1–8 carbons; which comprises

heating the precursor monomers together in an organic solvent at a temperature above 120° C. and

in the presence of a polymerization initiator soluble in an organic solvent and having a half life of at least 1 minute at 120° C., the mole ratio of total monomers to initiator being between about 10:1 and 40:1.

4,219,633
PROCESS FOR THE PREPARATION OF ETHYLENE-PROPYLENE RANDOM COPOLYMERS

Paul E. Johnson, Aurora, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Apr. 9, 1979, Ser. No. 28,091
Int. Cl.[2] C08F *2/02, 2/34, 210/16*
U.S. Cl. 526—348 **9 Claims**

1. A process for preparing a resinous random copolymer of ethylene and propylene having high clarity and a distribution number greater than 90 which comprises (i) contacting under bulk or vapor phase polymerization conditions components comprising

(a) a catalyst capable of producing substantially crystalline polypropylene which comprises the reaction product of one or more transition metal compounds and one or more organometallic compounds of Group IA–IIIA metals; and

(b) ethylene and propylene in an essentially constant ratio of about 0.1 to 1.0 mole percent ethylene to about 99.9 to 99.0 mole percent propylene,

and, (ii) isolating said resinous random copolymer.

8. A resinous random copolymer of ethylene and propylene having high clarity and a distribution number greater than 90 prepared by the process which comprises contacting under bulk or vapor phase polymerization conditions components comprising

(a) a catalyst capable of producing substantially crystalline polypropylene which comprises the reaction product of one or more transition metal compounds and one or more organometallic compounds of Group IA–IIIA metals; and

(b) ethylene and propylene in an essentially constant ratio of

about 0.1 to 1.0 mole percent ethylene to about 99.9 to 99.0 mole percent propylene.

4,219,634

CONTROL OF PROCEDURES FOR FORMATION OF WATER-IMMISCIBLE THERMOSETTING PHENOL-FORMALDEHYDE RESINS

Ramesh C. Vasishth, Delta, Canada, assignor to Cor Tech Research Ltd., Richmond, Canada

Division of Ser. No. 855,376, Nov. 28, 1977, which is a division of Ser. No. 779,621, Mar. 21, 1977, Pat. No. 4,140,845. This application Jun. 20, 1979, Ser. No. 50,443

Int. Cl.[2] C08G *8/08*

U.S. Cl. 528—139 **3 Claims**

1. A process for the production of a water-immiscible thermosetting phenol-formaldehyde resin characterized by a large proportion of the linkages between benzene rings being benzyl ether linkages located ortho to the phenolic hydroxyl groups, which comprises:

exothermically methylolating phenol with formaldehyde at a mole ratio of formaldehyde to phenol of at least 1:1 in an essentially aqueous reaction medium containing at least one water-soluble carboxylate catalyst for the reaction having the formula:

$$(C_nH_{2n+1}COO)_xM$$

wherein n is an integer from 0 to 10, x is greater than 1 and M is a metal having an atomic number from 21 to 30 at a weight ratio of water to solids loaded in the reaction mixture less than 1,

polymerizing the methylolated phenol at least until there separates from the reaction medium a water-immiscible phenol-formaldehyde resin characterized by a large proportion of the linkages between benzene rings being benzyl ether linkages ortho to the phenolic hydroxyl groups,

separating the resin phase from the aqueous phase, and

diluting the aqueous phase to a water-to-solids ratio greater than 1 following said exothermic methylolation step and prior to said resin phase separation step, whereby said separated resin phase has a higher viscosity than results when said dilution step is omitted.

4,219,635

PROCESS FOR POLY (BISPHENOL A/TEREPHTHALATE/CARBONATE) USING PYRIDINE REACTION MEDIUM

Robert S. Cooke, Morris Plains, N.J.; Josefina T. Baker, Sunnydale, Calif., and Stylianos Sifniades, Madison, N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Jan. 26, 1979, Ser. No. 6,819

Int. Cl.[2] C08G *63/64*

U.S. Cl. 528—182 **2 Claims**

1. In a process for production of poly(ester/carbonate) by adding phosgene to a reaction mixture of bisphenol A ie. 2,2-bis-(4-hydroxyphenyl)propane) and terephthalic acid wherein the bisphenol A and terephthalic acid are at mole ratios in the range between 2.0:0.8 and 2.0:1.3; the reaction medium consists essentially of pyridine; the concentration of the bisphenol A plus terephthalic acid is in the range between about 5 and about 50 grams/100 milliliters of pyridine; and the phosgene reactant is added to said reaction mixture under agitation, at a rate of at least 0.07 gram-millimole/liter.second: the improvement which comprises maintaining said reaction mixture at temperature in the range between 50° C. and 115° C. and not below the temperature given by the relation with phosgene feed rate:

$$\ln U = C - E/RT,$$

where U is phosgene feed rate in gram-moles/liter.second, C is a constant = 10, E = 12 kilocalories/mole is the activation energy in the Arrhenius equation for the specific second order rate constant of the reaction of bisphenol A with terephthalic anhydride, and R = 0.001987 is the gas constant in units of kilocalories/gram-mole-degree Kelvin.

4,219,636

PREPARATION POLYAMIDES OF ISOPHTHALIC ACID AND HEXAMETHYLENE DIAMINE WITH FORMIC ACID

Werner Nielinger; Dieter Neuray, and Bert Brassat, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 22, 1978, Ser. No. 944,747

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1977, 2743515

Int. Cl.[2] C08G *69/28*

U.S. Cl. 528—318 **5 Claims**

1. A process for the production of a transparent solid polyamide which comprises polycondensing a salt of isophthalic acid and hexamethylene diamine in the presence of from 0.01 to 5 mol %, based on the salt, of formic acid or a formic acid donor.

4. A process as claimed in claim 1 wherein up to 30 mol % of a salt of isophthalic acid and a bis(4-aminocyclohexyl)alkane or a salt of isophthalic acid and isophorone diamine or of an amino carboxylic acid or a lactam is used.

4,219,637

POLYPHOSPHAZENE POLYMERS CONTAINING CYCLIC SUBSTITUENTS FROM 1,2- OR 1,3-DIFUNCTIONAL COMPOUNDS

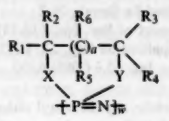
William L. Hergenrother, Akron, and Adel F. Halasa, Bath, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Sep. 8, 1978, Ser. No. 941,112

Int. Cl.[2] C08G *83/00, 73/00*

U.S. Cl. 528—399 **8 Claims**

1. A polyphosphazene polymer containing units represented by the formula:



wherein X and Y are the same or different and are selected from the group consisting of: —O—, —S—, or —NH—; $R_{1\text{-}6}$ are independently selected from a group consisting of hydrogen, alkyl containing 1 to 10 carbon atoms, cycloaliphatic compounds containing 3 to 10 carbons, and substituted or unsubstituted aryl; a is 0 to 1; $20 \leqq (w+z) \leqq 50{,}000$ per polymer; and X, Y, and $R_{1\text{-}6}$ are independently selected for each polymer unit.

4,219,638

POLYETHER DIUREIDE EPOXY ADDITIVES

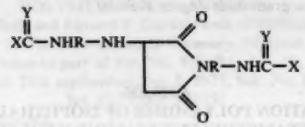
Harold G. Waddill, and Heinz Schulze, both of Austin, Tex., assignors to Texaco Development Corporation, White Plains, N.Y.

Division of Ser. No. 890,743, Mar. 27, 1978, Pat. No. 4,146,701. This application Dec. 21, 1978, Ser. No. 972,126

Int. Cl.[2] C08G *65/32*

U.S. Cl. 528—421 **1 Claim**

1. As an additive for increasing the adhesive strength of an anhydride cured epoxy resin, a composition of the formula:



where
Y is S or O
X is NH_2 or H and
R is a polyoxyalkylene radical.

4,219,639

TRANSPARENT AND TRANSLUCENT POLY(BUTENE-1)

Mark P. Mack, and William J. Libbey, both of Ponca City, Okla., assignors to Conoco, Inc., Ponca City, Okla.

Filed Aug. 16, 1978, Ser. No. 934,237
The portion of the term of this patent subsequent to Feb. 5, 1997, has been disclaimed.
Int. Cl.[2] C08F *6/00*
U.S. Cl. 528—494 **11 Claims**

1. A method for obtaining a stable transparent hexagonal poly(butene-1) comprising placing said polybutene-1 in an unstable tetragonal crystallite form and contacting said unstable polybutene-1 with a volatile non-polar solvent having an effective reflux temperature of about 40° C. to about 140° C. and immediately evaporating the solvent.

4,219,640

POLYMERS OF VINYL CHLORIDE HAVING LOW VINYL CHLORIDE MONOMER CONTENT, AND METHOD OF MAKING SAME

Michael F. Saggese, Nashville, Tenn.; Fred V. Owens, Trenton, and Barbara Fila, Edison, both of N.J., assignors to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Continuation-in-part of Ser. No. 613,711, Sep. 15, 1975, abandoned. This application Sep. 22, 1977, Ser. No. 835,541
Int. Cl.[2] C08F *6/00*
U.S. Cl. 528—501 **10 Claims**

1. A process for reducing the vinyl chloride monomer content of dry particulate homopolymers of vinyl chloride or copolymers of vinyl chloride and at least one other monomer copolymerizable therewith, that consists of

a. subjecting said dry particulate homopolymers or copolymers that contain up to about 15,000 parts by weight of vinyl chloride monomer per million parts per weight of polymer, in admixture with from 0 to about 10 parts by weight per 100 parts by weight of polymer of at least one heat stabilizer, from 0 to about 20 parts by weight per 100 parts by weight of polymer of an impact modifier, from 0 to about 5 parts by weight per 100 parts by weight of polymer of a processing aid, and from 0 to about 1 part by weight per 100 parts by weight of polymer of a lubricant, to vigorous agitation in an apparatus having an attrition and shearing action and thereby elevating the temperature of said particulate homopolymers or copolymers, said elevated temperature being lower than the fusion temperature of said homopolymers or copolymers, and b. subjecting said particulate homopolymers or copolymers, while at said elevated temperature, to subatmospheric pressure in the range of from about 10 to about 26 or more inches of mercury until they contain 2 parts or less of vinyl chloride monomer per million parts of polymer.

4,219,641

PROCESS FOR PREPARING ERYTHROMYCIN SUCCINATE

Francis E. Desposato, and Edward J. Hessler, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 970,342, Dec. 18, 1978, abandoned. This application Jun. 14, 1979, Ser. No. 48,510
Int. Cl.[2] C07H *17/08*; A61K *31/70*
U.S. Cl. 536—9 **12 Claims**

1. A process for preparing erythromycin ethyl succinate which comprises reacting erythromycin USP quality free base with ethyl succinyl chloride in a two phase system consisting of an organic solvent which is capable of forming two phases with water or an aqueous base, and an aqueous base.

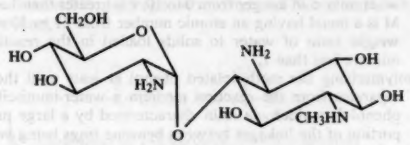
4,219,642

FORTIMICIN AO

Paulette Collum, Zion, and Earl E. C. Fager, Lake Villa, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Mar. 29, 1979, Ser. No. 25,247
Int. Cl.[2] A61K *31/71*; C07H *15/22*
U.S. Cl. 536—17 R **3 Claims**

1. Fortimicin AO represented by the formula



or a pharmaceutically acceptable salt thereof.

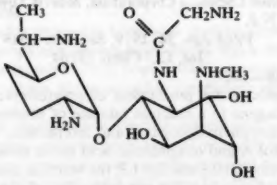
4,219,643

FORTIMICIN AN

John H. Seely, Lake Forest, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Mar. 29, 1979, Ser. No. 25,250
Int. Cl.[2] A61K *31/71*; C07H *15/22*
U.S. Cl. 536—17 R **1 Claim**

1. Fortimicin AN represented by the formula:



and the pharmaceutically acceptable salts thereof.

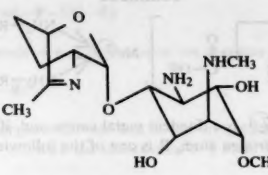
4,219,644

FORTIMICINS AH AND AI

Alma W. Goldstein, Lake Bluff, and Earl E. C. Fager, Lake Villa, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Mar. 29, 1979, Ser. No. 25,252
Int. Cl.[2] A61K *31/71*; C07H *15/22*
U.S. Cl. 536—17 R **2 Claims**

1. Fortimicin AH represented by the formula:



or a pharmaceutically acceptable salt thereof.

4,219,645

STABILIZED NICOTINAMIDE-ADENINE DINUCLEOTIDES AND PROCESS FOR THEIR PREPARATION

Joseph Stürk, and Reinhard Müller-Matthesius, both of Marburg an der Lahn, Fed. Rep. of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg an der Lahn, Fed. Rep. of Germany

Filed Mar. 29, 1979, Ser. No. 25,052

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1978, 2814154

Int. Cl.² C07H *17/00, 15/12*

U.S. Cl. 536—27 **9 Claims**

6. A method for stabilizing a solution of a member selected from the group consisting of oxidized nicotinamide-adenine dinucleotide, reduced nicotinamide-adenine dinucleotide, oxidized nicotinamide-adenine dinucleotide phosphate, and reduced nicotinamide-adenine dinucleotide phosphate, which method comprises combining a solution of said member with decomposed collagen having a molecular weight from 2000 to 20,000.

4,219,646

PROCESS FOR PREPARING CROSS-LINKED STARCHES USING STMP

Roger W. Rubens, Somerville, N.J., assignor to National Starch and Chemical Corp., Bridgewater, N.J.

Division of Ser. No. 888,382, Mar. 20, 1978. This application Mar. 19, 1979, Ser. No. 21,519

Int. Cl.² C08B *31/02*

U.S. Cl. 536—109 **7 Claims**

1. A dual derivatizing process for the preparation of cold water swelling starches comprising the steps of:

1. reacting a granular starch base in a primary crosslinking step with sodium trimetaphosphate in an amount of 0.01 to 0.6%, based on the dry weight of the starch, in an aqueous slurry at a pH of 10–12 and a temperature sufficiently low to maintain the starch in an unswollen granular state;
2. neutralizing the slurry to a pH of 5–6.5;
3. recovering the primary crosslinked granular starch;
4. reslurrying the resultant starch in water at a pH of at least 7.5 and adding thereto additional sodium trimetaphosphate in an amount of 0.01–0.6%, based on the dry weight of the starch;
5. drum drying the resultant slurry to effect a secondary crosslinking reaction in situ; and
6. recovering the dried cold water swelling starch product.

4,219,647

CERTAIN AMIDES OF PROSTACYCLIN AND RELATED COMPOUNDS

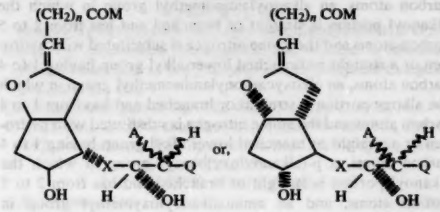
Josef Fried, 5715 S. Kenwood Ave., Chicago, Ill. 60636

Continuation-in-part of Ser. No. 803,747, Jun. 6, 1977. This application Sep. 22, 1977, Ser. No. 835,731

Int. Cl.² C07D *307/93*

U.S. Cl. 542—421 **2 Claims**

1. A compound of the formula:



wherein

X is C═C or C≡C;

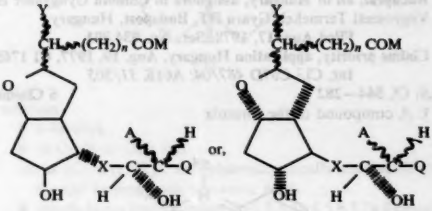
A is F or H;

Q is alkyl or alkenyl of 3 to 6 carbon atoms;

n is an integer of from 2 to 5; and

M is an amino acid radical; or an amino acid aklyl ester radical, said radicals being derived from amino acids selected from the group consisting of glycine, taurine, leucine, phenylalanine, proline, histidine and alanine.

2. A compound of the formula,



wherein

Y is halo; and

X, A, Q, n, and M are as defined in claim 1.

4,219,648

7-[[AMINO(1,3-DIHYDROBENZO[c]THIENYL)ACETYL-]AMINO]CEPHALOSPORIN DERIVATIVES

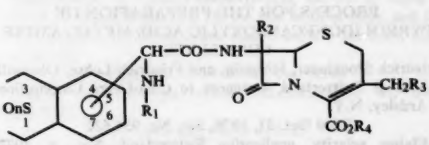
Michael L. Edwards, Cincinnati, Ohio, assignor to Richardson-Merrell Inc., Wilton, Conn.

Filed Mar. 6, 1978, Ser. No. 883,409

Int. Cl.² C07D *501/36, 501/34*

U.S. Cl. 544—21 **24 Claims**

1. A compound selected from the formula



wherein n is 0, 1 or 2; R_1 is selected from the group consisting of hydrogen, a straight or branched lower alkanoyl group which has from 2 to 5 carbon atoms, and a straight or branched lower alkoxycarbonyl group in which the alkoxy portion has from 1 to 4 carbon atoms; R_2 is hydrogen or methoxy; R_3 is selected from the group consisting of hydrogen, a straight or branched lower alkanoyloxy group having 2 to 5 carbon atoms, 1,3,4-thiadiazol-2-ylthio, 5-methyl-1,3,4-thiadiazol-2-ylthio, tetrazol-5-ylthio, 1-methyltetrazol-5-ylthio, 1,3,4-oxadiazol-2-ylthio, 5-methyl-1,3,4-oxadiazol-2-ylthio, 1,3,4-triazol-2-ylthio, 5-methyl-1,3,4-triazol-2-ylthio and 1,2,3-triazol-5-ylthio; R_4 is selected from the group consisting of hydrogen, a straight or branched lower alkyl group of from 1 to 4 carbon atoms, an alkanoyloxymethyl group in which the

alkanoyl portion is straight or branched and has from 2 to 5 carbon atoms, an alkanoylaminomethyl group in which the alkanoyl portion is straight or branched and has from 2 to 5 carbon atoms and the amine nitrogen is substituted with hydrogen or a straight or branched lower alkyl group having 1 to 4 carbon atoms, an alkoxycarbonylaminomethyl group in which the alkoxy portion is straight or branched and has from 1 to 4 carbon atoms and the amine nitrogen is substituted with hydrogen or a straight or branched lower alkyl group having 1 to 4 carbon atoms, a p-(alkanoyloxy)benzyl group in which the alkanoyl portion is straight or branched and has from 2 to 5 carbon atoms, and an aminoalkanoyloxymethyl group in which the alkanoyl portion has from 2 to 15 carbon atoms and the amino nitrogen is hydrogen substituted, or mono- or disubstituted with a straight or branched lower alkyl group having from 1 to 4 carbon atoms; or a pharmaceutically acceptable salt thereof.

4,219,649

PYRIDO[1,2-a]PYRIMIDINE DERIVATIVES

Josef Knoll; Zoltan Meszaros; Istvan Hermecz, all of Budapest; Ferenc Fülöp; Gabor Bernath, both of Szeged; Sandor Virag, Budapest; Gabor Nagy, Budapest, and Peter Szentmiklosi, Budapest, all of Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara RT, Budapest, Hungary

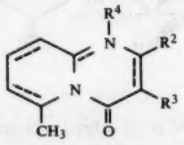
Filed Aug. 17, 1978, Ser. No. 934,801

Claims priority, application Hungary, Aug. 19, 1977, CI 1765

Int. Cl.[2] **C07D** *487/04;* **A61K** *31/505*

U.S. Cl. 544—282 **6 Claims**

1. A compound of the formula



or a pharmaceutically acceptable acid addition or quaternary ammonium salt thereof

wherein

R^2 is C_1 to C_6 alkyl;

R^3 is C_1 to C_6 alkyl;

R^4 is a single electron pair, hydrogen or lower alkyl; and the dotted lines indicate saturated or unsaturated bonds.

4,219,650

PROCESS FOR THE PREPARATION OF PYRROLIDONECARBOXYLIC ACID/METAL/AMINE COMPLEXES

Friedrich Stockinger, Hölstein, and Friedrich Lohse, Oberwill, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

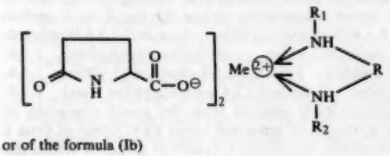
Filed Oct. 31, 1978, Ser. No. 956,522

Claims priority, application Switzerland, Nov. 4, 1977, 13448/77

Int. Cl.[2] **C07F** *1/08, 3/06, 3/08, 15/04*

U.S. Cl. 546—11 **7 Claims**

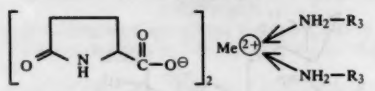
1. A process for the preparation of a pyrrolidone-5-carboxylic acid/metal salt/amine complex of the formula (Ia)



(Ia)

or of the formula (Ib)

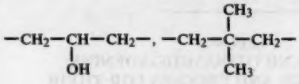
-continued

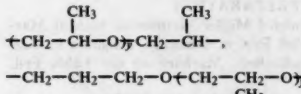


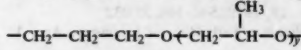
(Ib)

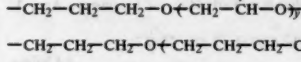
in which Me $^{2+}$ is a divalent metal cation and, if R_1 and R_2 are each a hydrogen atom, R is one of the following radicals

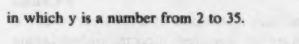
$-CH_2+CH_2\rightarrow_x$, in which x is a number from 1 to 6,



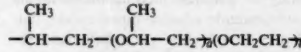




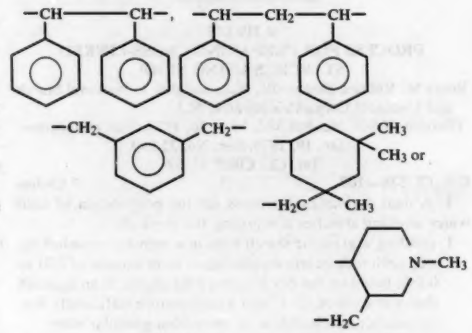




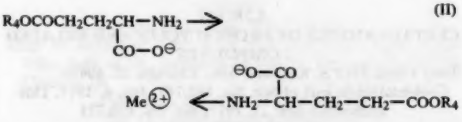
in which y is a number from 2 to 35.



in which b is a number from 10 to 50 and the sum of a and c is a number from 2 to 4,



and, if R_1 is a hydrogen atom and R_2 is an alkyl having 1 to 4 C atoms, cyclohexyl, benzyl, 2-aminoethyl or 3-aminopropyl, or if R_1 and R_2 are each an alkyl having 1 to 4 C atoms, cyclohexyl or benzyl, R is an ethylene or propylene radical, and in which R_3 is an alkyl having 2 to 12 C atoms, 2-hydroxyethyl, 2-hydroxypropyl, benzyl, cyclohexyl or cyclopentyl, which comprises reacting 1 mol of a L-glutamic acid ester/metal complex of the formula II



(II)

in which R_4 is an alkyl having 1 to 4 C atoms, cyclohexyl or benzyl with 1 mol of a diamine of the formula IIIa

$$R_1—NH—R—NH—R_2 \quad \text{(IIIa)}$$

or with 2 mols of a monoamine of the formula IIIb

$$NH_2—R_3 \quad \text{(IIIb)}$$

in a polar organic solvent and in the temperature range from 60° to 180° C., with the elimination of 2 mols of alcohol.

4,219,651

BENZIMIDAZO-[1,2-A]-QUINOLINES

Dieter Günther, Kelkheim; Rüdiger Erckel, Hofheim am Taunus, and Horst Frühbeis, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

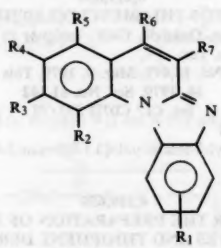
Filed Sep. 2, 1977, Ser. No. 830,175

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1976, 2640760

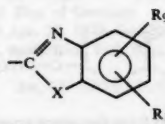
Int. Cl.[2] C07D *471/22*; C09B *57/00*

U.S. Cl. 546—70 **1 Claim**

1. A compound of the formula



in which R_1 is hydrogen, C_1-C_4-alkyl, halogen, nitro, amino, C_1-C_4-alkanoylamino, mono- or di-C_1-C_4-alkylamino; R_2 is hydrogen, cyano, carboxy, carbo-C_1-C_4-alkoxy, carbonamido, mono- or di-C_1-C_4-alkylcarbonamido; R_3 and R_4 each is hydrogen, C_1-C_4-alkyl, C_1-C_4-alkoxy, nitro, amino, C_1-C_4-alkanoylamino, cyano, carboxy, carbo-C_1-C_4-alkoxy, carbonamido, mono- or di-C_1-C_4-alkylcarbonamido; R_3 is hydrogen; R_6 is hydrogen, cyano, carboxy, carbo-C_1-C_4-alkoxy, carbonamido, mono- or di-C_1-C_4-alkylcarbonamido and R_7 is the group



wherein X stands for O,S, NH or N—R_{11} and R_8, R_{11} are each C_1–C_4-alkyl, and R_9, R_{10}, each independent from one another, are hydrogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, halogen, phenyl or naphthyl or R_9 and R_{10} if in adjacent position, may form together a fused benzene ring.

4,219,652

N-METHYL AND N-PHENETHYL-CIS-DECAHYDROISOQUINOLINES

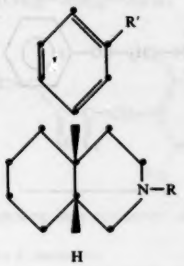
Dennis M. Zimmerman, Morresville, and Winston S. Marshall, Bargersville, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 467,707, May 7, 1974, Ser. No. 477,221, Jun. 7, 1974, abandoned, and Ser. No. 487,342, Jul. 10, 1974, abandoned. This application Sep. 30, 1975, Ser. No. 618,175

Int. Cl.[2] C07D *217/16*; A61K *31/47*

U.S. Cl. 546—144 **4 Claims**

1. A compound of the formula:



H

wherein

R is methyl;

R′ is O-alk or OH; and

alk is (C_1–C_3) alkyl, and pharmaceutically-acceptable salts thereof formed with non-toxic acids.

4. cis-dl-3a-(m-hydroxyphenyl)-1,2,3,3a,4,5,6,7,7a,8-decahydroisoquinoline.

4,219,653

2,6-DIMETHYL-3,5-DIMETHOXYCARBONYL-4-(ORTHO-DIFLUOROMETHOXYPHENYL)-1,4-DIHYDROPYRIDINE

Valeria V. Kastron, ulitsa Vaidavas, 7, kv. 43; Rasma O. Vitolin, ulitsa Lielvardes, 26, kv. 39, both of Riga; Jury A. Fialkov, ulitsa Oktyabrskoi Revoljutsii, 13/4, kv. 3; Svetlana V. Shelyazhenko, ulitsa Borschagovskaya, 10-a, kv. 141, both of Kiev; Gunar Y. Dubur, ulitsa Ierikju, 43, kv. 2; Agris A. Kimenis, ulitsa Staitseles, 15, kv. 208, both of Riga, and Lev M. Yagupolsky, ulitsa Ivana Kudri, 41, kv. 48, Kiev, all of U.S.S.R.

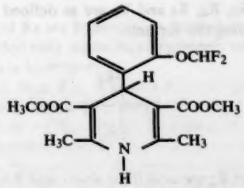
Filed Jan. 5, 1979, Ser. No. 1,148

Claims priority, application U.S.S.R., Jan. 11, 1978, 2569286[1]

Int. Cl.[2] C07D *213/55*

U.S. Cl. 546—322 **1 Claim**

1. 2.6-Dimethyl-3,5-dimethoxycarbonyl-4-(o-difluoromethoxyphenyl)-1,4-dihydropyridine of the formula:



4,219,654

PHOTOINITIATORS

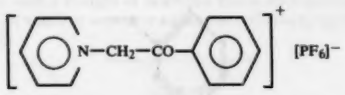
James V. Crivello, Elnora, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 789,419, Apr. 21, 1977, Pat. No. 4,136,102, which is a division of Ser. No. 574,006, May 2, 1975, Pat. No. 3,981,897, which is a continuation-in-part of Ser. No. 466,374, May 2, 1974, abandoned, Ser. No. 466,375, May 2, 1974, abandoned, and Ser. No. 466,378, May 2, 1974, abandoned. This application Oct. 10, 1978, Ser. No. 949,642

Int. Cl.[2] C07D *213/48*

U.S. Cl. 546—342 1 Claim

1. The compound



4,219,655

PROCESS FOR THE PRODUCTION OF N-ACYL SUBSTITUTED OXAZOLIDINES

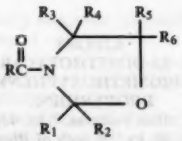
Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Jul. 16, 1979, Ser. No. 57,614

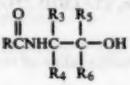
Int. Cl.[2] C07D *263/08*

U.S. Cl. 548—215 7 Claims

1. A process for the production of an N-acyl substituted oxazolidine having the formula



in which R is C_1–C_6 haloalkyl, C_1–C_6 alkyl, C_1–C_6 thioalkyl or C_2–C_4 haloalkenyl, R_1 is hydrogen, C_1–C_6 alkyl, phenyl or substituted phenyl in which the substituents are mono- or di-chloro, nitro, methyl, methoxy or hydroxyl; R_2, R_3, R_4 and R_6 are independently hydrogen or C_1–C_4 alkyl and R_5 is hydrogen, C_1–C_4 alkyl or phenyl, comprising reacting a compound having the formula



in which R, R_3, R_4, R_5 and R_6 are as defined above, with a compound having the formula

in which R_1 and R_2 are as defined above and R_7 is C_1–C_4 alkyl, in the presence of an acid catalyst.

4,219,656

3,4-DISUBSTITUTED THIOPHENES

Jeffery B. Press, Bellvale, N.Y., and Sidney R. Safir, River Edge, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Oct. 24, 1978, Ser. No. 954,268

Int. Cl.[2] C07D *333/38*

U.S. Cl. 549—64 2 Claims

1. 5-Chloro-4-ethoxy-3-thiophenecarboxamide.
2. 5-Chloro-4-ethoxy-3-thiophenecarboxanilide.

4,219,657

DIBENZOTHIOPHENES

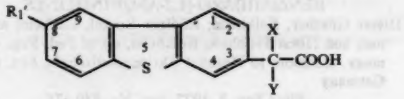
Leo Berger, Montclair; John T. Plati, Rutherford, and Albert Ziering, Nutley, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 669,940, Mar. 24, 1976, abandoned. This application Dec. 19, 1977, Ser. No. 861,746

Int. Cl.[2] C07D *333/76*

U.S. Cl. 549—43 5 Claims

1. A compound of the formula



wherein R'_1 is halogen, and X and Y, independently, are hydrogen or lower alkyl, or when X and Y are different, its enantiomers.

4,219,658

6,6-DIMETHYL-3-THIABICYCLO[3.1.0]HEXAN-2-ONE

Steven A. Roman, Oakdale, Calif., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 18,479, Mar. 8, 1979. This application Jul. 26, 1979, Ser. No. 61,142

Int. Cl.[2] C07D *333/78*

U.S. Cl. 549—52 1 Claim

1. 6,6-Dimethyl-3-thiabicyclo[3.1.0]hexan-2-one.

4,219,659

PROCESS FOR THE PREPARATION OF THIOPHENE DERIVATIVES AND THIOPHENE DERIVATIVES OBTAINED THEREFROM

Tamotsu Fujisawa; Kunikazu Sakai, both of Yamato, and Akira Kurebayashi, Tokyo, all of Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

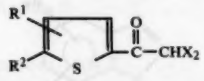
Filed May 30, 1978, Ser. No. 910,290

Claims priority, application Japan, Jul. 21, 1977, 52/86606; Jul. 21, 1977, 52/86607

Int. Cl.[2] C07D *333/24, 333/28*

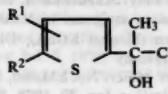
U.S. Cl. 549—79 6 Claims

1. A process for preparing an α-(2-thienyl)-propionic acid comprising reacting a 2-(dihaloacetyl)-thiophene of the formula

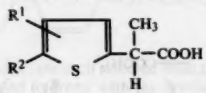


wherein R^1 is selected from the group consisting of hydrogen atom and lower alkyl radicals, R^2 is selected from the group consisting of a hydrogen atom, hydrocarbon radicals and halogen atom, and X is a halogen atom, with a methylmetal compound selected from the group consisting of methylmagnesium halide, methyllithium, dimethylzinc and methylzinc halide under essentially anhydrous conditions in the presence of a

solvent and then treating the reaction product with water, thereby forming a 1-(2-thienyl)-1-dihalomethylethanol of the formula



and reacting said 1-(2-thienyl)-1-dihalomethylethanol with an alkali metal hydroxide to form an α-(2-thienyl)-propionic acid of the formula



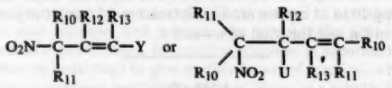
4,219,660

CONJUGATED DIENE DERIVATIVES

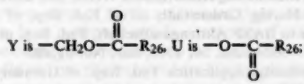
Pius A. Wehrli, North Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jun. 24, 1977, Ser. No. 809,591
Int. Cl.[2] C07C *69/76, 69/78, 79/18*
U.S. Cl. 560—20 **6 Claims**

1. A compound of the formula:



wherein R_{10}, R_{11}, R_{12} and R_{13} are lower alkyl or hydrogen,



and R_{26} is aryl which is unsubstituted or nuclear substituted by a halogen, lower alkoxy, carboxy, nitro, nitromethyl, amino or cyano.

4,219,661

PROCESS FOR THE PRODUCTION OF URETHANES

Robert Becker; Johann Grolig, both of Leverkusen; Christian Rasp, Cologne, and Gerhard Scharfe, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 23, 1979, Ser. No. 32,581
Claims priority, application Fed. Rep. of Germany, May 5, 1978, 2819826
Int. Cl.[2] C07C *125/04*
U.S. Cl. 560—24 **11 Claims**

1. A process for the production of urethanes comprising reacting organic nitro compounds with carbon monoxide and organic compounds containing at least one hydroxyl group in the liquid phase at elevated temperature and pressure in the presence of palladium and/or palladium compounds and either iron oxychloride or a mixture of iron compounds containing iron oxychloride.

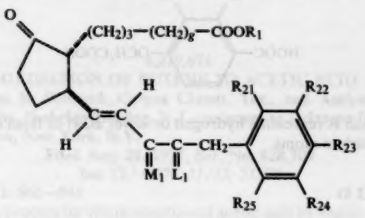
4,219,662

11-DEOXY-17-PHENYL-PGE$_1$ ANALOGS

Gordon L. Bundy, Kalamazoo, and Norman A. Nelson, Galesburg, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 542,372, Jan. 20, 1975, Pat. No. 4,029,693.
This application Feb. 28, 1977, Ser. No. 772,548
Int. Cl.[2] C07C *177/00*
U.S. Cl. 560—53 **22 Claims**

1. A compound of the formula



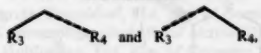
or a mixture comprising that compound and the enantiomer thereof;

wherein g is 3 to 5, inclusive;

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one or two alkyl of one to 3 carbon atoms, inclusive, or chloro, or a pharmacologically acceptable cation;

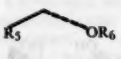
wherein L_1 is

or a mixture of

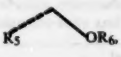


wherein R_3 and R_4 are hydrogen or methyl, being the same or different;

wherein M_1 is



or



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that R_5 is methyl only when R_6 is hydrogen and R_6 is methyl only when R_5 is hydrogen;

wherein R_{21}, R_{22}, R_{23}, R_{24}, and R_{25} are hydrogen, fluoro, chloro, trifluoromethyl, alkyl of one to 4 carbon atoms, inclusive, or —OR_8 wherein R_8 is alkyl of one to 3 carbon atoms, inclusive, with the proviso that at least two of R_{21}, R_{22}, R_{23}, R_{24}, and R_{25} are hydrogen, and not more than two of R_{21}, R_{22}, R_{23}, R_{24}, and R_{25} are chloro, fluoro, trifluoromethyl or —OR_8.

4,219,663

(2,3-DICHLORO-4-CARBOXY)PHENOXY ACETIC ACID AND ESTERS THEREOF

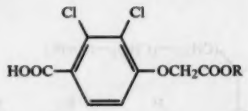
Jacqueline S. Laforest, Vincennes, France, assignor to Smith-Kline Corporation, Philadelphia, Pa.

Division of Ser. No. 834,209, Sep. 19, 1977, abandoned. This application Jun. 28, 1978, Ser. No. 920,046

Int. Cl.[2] C07C *63/14*

U.S. Cl. 560—62 3 Claims

1. A chemical compound having the formula:



in which R represents hydrogen or lower alkyl of from one to four carbon atoms.

4,219,664

15,16-DIOXY PROSTENOIC ACIDS AND ESTERS

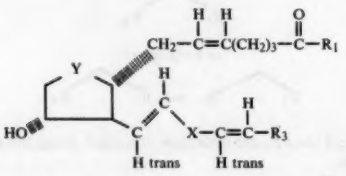
Martin J. Weiss, Oradell, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 767,863, Feb. 11, 1977, Pat. No. 4,113,967, which is a continuation-in-part of Ser. No. 663,603, Mar. 3, 1976, abandoned. This application Apr. 11, 1978, Ser. No. 895,397

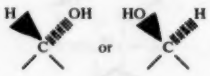
Int. Cl.[2] C07C *177/00*

U.S. Cl. 560—121 11 Claims

1. An optically active compound of the formula:



which represents the natural (nat.) configuration or a racemic mixture of the compound and the enantiomer thereof, wherein

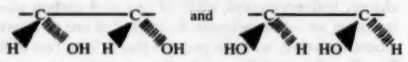


Y is a divalent radical

R_1 is hydroxy or C_1–C_5 alkoxy;

R_3 is methyl, ethyl or propyl;

X is a divalent radical



and when R_1 is hydroxy the pharmacologically acceptable cationic salts thereof.

4,219,665

POLYCARBOXYLIC ACID-2-HYDROXYLALKYL ESTERS, THEIR USE AS EMULSIFYING AGENTS AND COSMETIC EMULSIONS CONTAINING THEM

Ulrich Zeidler, and Fanny Scheuermann, both of Düsseldorf, Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Düsseldorf-Holthausen, Fed. Rep. of Germany

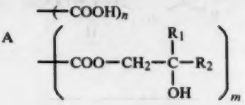
Continuation-in-part of Ser. No. 834,460, Sep. 19, 1977, abandoned. This application Jun. 30, 1978, Ser. No. 920,702

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1976, 2642236

Int. Cl.[2] C07C *69/34, 69/66, 69/74, 69/78*

U.S. Cl. 560—122 12 Claims

1. Polycarboxylic acid-2-hydroxyalkyl esters of the formula



wherein A is a radical derived from polycarboxylic acids having from 3 to 6 carboxyl groups selected from the group consisting of alkane- or alkenepolycarboxylic acids having 3 to 8 carbon atoms in the chain; cycloalkane- or cycloalkenecarboxylic acids having 5 to 8 carbon atoms in the ring; benzene polycarboxylic acids; hydroxyalkane polycarboxylic acids having 3 to 8 carbon atoms in the alkane chain; nitrilotriacetic acid; and ethylenediaminetetraacetic acid, R_1 is a member selected from the group consisting of hydrogen and an alkyl radical having 1 to 12 carbon atoms, R_2 is an alkyl radical having 10 to 22 carbon atoms, $n \geqq 0$ and $m \geqq 2$, with the proviso that $m \geqq n$ and the total of $n+m \geqq 3$.

4,219,666

PREPARATION OF CARBOXYLIC ACID ESTERS OF VICINAL GLYCOLS

Rolf Platz, Mannheim; Hans-Martin Weitz, Bad Durkheim, and Juergen Hartig, Gruenstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 30, 1979, Ser. No. 61,890

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1978, 2834540

Int. Cl.[2] C07C *67/04*

U.S. Cl. 560—246 1 Claim

1. A process for the preparation of carboxylic acid esters of vicinal glycols by oxidizing olefins with oxygen in the presence of carboxylic acids and of halogen and tellurium salts as catalysts, wherein this reaction is carried out in vessels and apparatus consisting of, or lined with, zirconium or alloys of not less than 80% by weight of zirconium, the remainder being tin and/or hafnium.

4,219,667

SULPHONES WITH AN ALCOHOL GROUP AND THEIR ESTERS

Marc Julia, Paris, and Albert Menet, Rhone, both of France, assignors to Rhone-Poulenc S.A., Paris, France

Filed Dec. 5, 1973, Ser. No. 421,806

Claims priority, application France, Dec. 7, 1972, 72.43582; Dec. 22, 1972, 72.45993

Int. Cl.[3] C07C *67/02, 147/10*

U.S. Cl. 560—254 6 Claims

1. A compound of the formula:

$$RSO_2CH_2—CX{=}CY—CH_2OR_1$$

in which one of X and Y is methyl and the other is hydrogen,

R is phenyl, and R_1 is hydrogen or $—COR_2$ in which R_2 is hydrogen, alkyl or phenyl.

4,219,668

4-HYDROXY,4-BIPHENYLBUTYRIC ACID

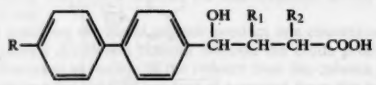
Fortunato S. Chiccarelli, New City, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Jul. 5, 1979, Ser. No. 54,741

Int. Cl.[2] C07C *69/76*

U.S. Cl. 562—469 **7 Claims**

1. A compound selected from those of the formula:



wherein R, R_1 and R_2 are each selected from the group consisting of hydrogen and hydroxy with the proviso that when R is hydrogen, then R_1 and R_2 cannot both be hydrogen.

4,219,669

METHOD OF TREATING MOTHER LIQUOR OF REACTION IN TEREPHTHALIC ACID PRODUCTION

Fujio Tsuchiya; Kenzo Yamamoto; Katsunobu Yamaguchi, and Akio Okagami, all of Yokohama, Japan, assignors to JGC Corporation, Tokyo and Orient Kagaku Kogyo K.K., Osaka, both of, Japan

Filed Jun. 8, 1979, Ser. No. 46,823

Int. Cl.[2] C07C *51/42*

U.S. Cl. 562—486 **5 Claims**

1. A method of treating mother liquor of reaction in terephthalic acid production, wherein paraxylene is oxidized with molecular oxygen by using a salt of heavy metal as a catalyst in acetic acid medium, and wherein the terephthalic acid thus formed and precipitated in reaction solution is separated by filtration or centrifuge to give mother liquor of reaction, which method comprising feeding the mother liquor to a tubular type heater having at least one heating tube of a relatively small diameter which opens in one end at a separation chamber of a relatively large capacity, heating the liquor to a temperature above a boiling point of acetic acid under the operating pressure so as to form a mixture mainly composed of solid-gas two phases, discharging the mixture into the separation chamber to separate solid and gas phases, and drawing the gas phase which mainly comprises acetic acid out of the separation chamber and condensing it by cooling, while taking out the solid phase which comprises the salt of the heavy metal, terephthalic acid and reaction by-products from the bottom of the separation chamber in the form of discrete powder or easily crushable mass.

4,219,670

PROCESS FOR PRODUCING UNSATURATED ALDEHYDES AND UNSATURATED CARBOXYLIC ACIDS

Kazuya Okada; Hideo Matsuzawa; Hiromichi Ishii, and Masao Kobayashi, all of Otake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Division of Ser. No. 741,508, Nov. 12, 1976, Pat. No. 4,111,985, which is a division of Ser. No. 663,365, Mar. 3, 1976, Pat. No. 4,035,418. This application Mar. 14, 1978, Ser. No. 886,471

Claims priority, application Japan, Mar. 12, 1975, 50/30313; Mar. 31, 1975, 50/39452; Jul. 4, 1975, 50/82982

The portion of the term of this patent subsequent to Jul. 12, 1994, has been disclaimed.

Int. Cl.[2] C07C *45/04, 47/20, 51/32, 57/04*

U.S. Cl. 562—546 **6 Claims**

1. In a process for catalytically oxidizing isobutylene in the gas phase with molecular oxygen at a temperature of 200° to 450° C. to methacrolein and methacrylic acid, the improvement comprising: oxidizing isobutylene over a calcined catalyst consisting essentially of:

$$Mo_aSb_bBi_cFe_dNi_eSn_gX_hY_iO_j$$

wherein X is at least one metal selected from the group consisting of potassium, rubidium, cesium and thallium, and Y is at least one metal selected from the group consisting of magnesium, chromium, manganese, zinc, niobium, cadmium and tantalum, wherein subscripts a to j are the atomic ratios of each component and a is 12, b=0.2 to 20, c=0.2 to 12, d=0.2 to 12, e=0.2 to 12, g=0 to 20, h=0.01 to 4, i.=0.01 to 4, and j is a value determined by the valencies of the elements in the catalyst.

4,219,671

OXIDATION OF BUTENE TO ACETIC ACID

William E. Slinkard, Corpus Christi, Tex., and Anthony B. Baylis, Berkeley Heights, N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Aug. 29, 1977, Ser. No. 828,709

Int. Cl.[2] C07C *51/32, 53/08*

U.S. Cl. 562—548 **15 Claims**

1. A process for the production of acetic acid by vapor phase oxidation of a butene comprising reacting, in the vapor phase and at elevated temperatures within the range of about 180° to 400° C., said butene with molecular oxygen in the presence of a catalyst consisting essentially of a composition of the empirical formula:

$$V_fSb_gX_hMe_iO_j$$

in which formula V is vanadium, Sb is antimony, O is oxygen, X is at least one member selected from the group consisting of bismuth, niobium, neodymium, samarium, zinc, zirconium and chromium, and Me is at least one member selected from the group consisting of aluminum, iron and tin, and wherein the atomic ratio of the elements in said composition is such that when f is 10, g is from about 1 to 9, h is from about 1 to 9, i is from 0 to about 8, j is a number of at least 20 such that the valence requirements of V, Sb, X and Me are satisfied, and the sum of g, h and i does not exceed about 20.

4,219,672

ETHER CARBOXYLIC ACIDS

Gerhard Borggrefe, Dusseldorf, Fed. Rep. of Germany, assignor to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed Jan. 28, 1972, Ser. No. 221,815

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1971, 2104976

Int. Cl.[2] C07C *59/12*

U.S. Cl. 562—583 **5 Claims**

1. An ethercarboxylic acid compound selected from the group consisting of (1) a compound selected from the group consisting of O-carboxymethyl-citric acid, tris-O-carboxymethyl-1,1,1-trimethylolpropane, tris-O-carboxymethyl-1,1,1-trimethylolethane and bis-O-carboxymethyl-glyceric acid; and (2) a salt of said compound selected from the group consisting of alkali metal salts, ammonium salts, lower alkylamine salts, lower alkylolamine salts and the mixtures thereof.

4,219,673

2-(TRICHLOROMETHYLDITHIO)ACETIC ACID AND RELATED COMPOUNDS

Malcolm S. Singer, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 795,680, May 11, 1977, Pat. No. 4,110,475. This application Mar. 31, 1978, Ser. No. 892,058

Int. Cl.[2] A61K *31/215;* C07C *53/22*

U.S. Cl. 562—602 **2 Claims**

1. A compound selected from 2-(chloromethyldithio)acetic

acid, 2-(dichloromethyldithio)acetic acid or 2-(trichloromethyldithio)acetic acid.

4,219,674

PEROXIDE INITIATORS

Heinrich Wolfers, Rheurdt; Oskar Walter, Krefeld; Hans Rudolph, Krefeld, and Hans J. Rosenkranz, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 13, 1978, Ser. No. 969,099

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1977, 2757442

Int. Cl.[2] **C07C** *170/00*

U.S. Cl. 568—559 **2 Claims**

1. A mixture active as an initiator for a radical polymerization reaction comprising 1 to 99% by weight of a substituted 1,2-diphenyl ethane which initiates radical polymerization at a temperature of from 70° to 250° C. and 99 to 1% by weight of an organic peroxide which decomposes into radicals at a temperature of from 0° to 250° C.

4,219,675

BATCH PROCESS FOR MANUFACTURING AND PURIFYING LIQUID ORGANIC PEROXIDE BY DISTILLATION

Ramdas Venkatram; Vasanth R. Kamath, both of Tonawanda, N.Y., and Chester J. Smith, Crosby, Tex., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Feb. 6, 1979, Ser. No. 9,895

Int. Cl.[2] **C07C** *179/10, 179/18*

U.S. Cl. 568—563 **3 Claims**

1. In a batch process for the manufacture of a peroxy compound having the formula $(R)_y$

$$\left(\text{—COO}\right)_n (R')_x$$

wherein:

(a) x, y and n are 1 or 2;

(b) when x is 2, y is 1 and n is 2;

(c) when y is 2, x is 1 and n is 2;

(d) when x, y and n are 1, R is selected from the group consisting of a primary, secondary, or tertiary alkyl of 1 to 17 carbons, aryl of 6 to 14 carbons, and cycloalkyl of 3 to 12 carbons, said alkyl and cycloalkyl groups may be substituted by halogen, alkoxy or aryl, said aryl group may be substituted by halogen, alkoxy or alkyl; and

R′ is selected from the group consisting of tertiary alkyl of 4 to 12 carbons, tertiary aralkyl of 9 to 18 carbons, tertiary cycloalkyl of 6 to 12 carbons &

$$R_1C(=O)-$$

wherein R_1 is independently selected from the definition of R except for tert.-alkyl;

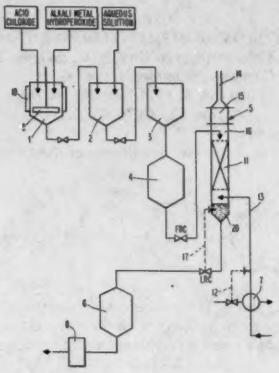
(e) when x is 2, R is a diradical selected from the group consisting of alkylene of 1 to 16 carbons, arylene of 6 to 14 carbons, cycloalkylene of 3 to 12 carbons, and aralkylene of 7 to 18 carbons; and R′ is the same as (d) except for

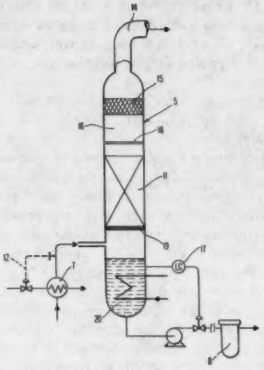
$$R_1C(=O)-;$$

and

(f) when y is 2, R′ is a di-tertiary diradical selected from alkylene of 6 to 16 carbons, aralkylene of 12 to 18 carbons, cycloalkylene of 7 to 12 carbons and alkynylene of 6 to 16 carbons and R is the same as (d); which comprises:

(1) Charging a batch reactor with





$$R(CCl)_n$$

and $R^1(OOH)_n$ in molar equivalent proportions selected from the group consisting of:

(i) 0.9 to 1.1 molar equivalents of

$$RCCl(=O)$$

and 0.4 to 0.6 molar equivalent of H_2O_2 or 0.9 to 1.1 molar equivalent of R^1OOH or

$$R_1COOH,$$

(ii) 0.9 to 1.1 molar equivalent of

$$RCCl(=O)$$

and 0.4 to 0.6 molar equivalent of $R^1(OOH)_2$, and

(iii) 0.9 to 1.1 molar equivalent of

and 1.8 to 2.2 molar equivalent of R^1OOH and an amount of an aqueous alkali metal hydroxide to maintain a pH greater than 10 and reacting this batch while stirring at a temperature range of about −10° C. to +50° C. for a sufficient time to complete the reaction; and

(2) washing the reaction batch with an aqueous solution to remove impurities from the liquid organic product and adjust the pH to neutral; the improvement which comprises

(3) purifying the liquid organic product in a countercurrent packed distillation column wherein the crude product is dispersed at the top of the column over the column packingand the purified product is removed from the bottom of the column, the crude product is countercurrently contacted with air or an inert gas admitted to the bottom of the column above a product sump in the bottom of the column wherein the product is maintained at a desired level to prevent exhaust of air at the bottom the overhead gas stream is released to the atmosphere, the ratio of the downwardly flowing crude product to the upwardly flowing air or inert gas depends on the nature of the product being purified.

4,219,676
UNSYMMETRICAL DIPEROXIDES AND PROCESSES OF USE IN POLYMERIZING UNSATURATED MONOMERS

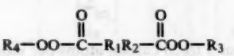
Jose Sanchez, Grand Island; Vasanth R. Kamath, Tonawanda, both of N.Y., and James C. Halas, Chicago, Ill., assignors to Pennwalt Corporation, Philadelphia, Pa.

Division of Ser. No. 757,185, Jan. 6, 1977, Pat. No. 4,079,074. This application Jan. 16, 1978, Ser. No. 869,411

Int. Cl.[2] C07C *179/14*

U.S. Cl. 568—566 **5 Claims**

1. Unsymmetrical diperoxides of the structure



where R_1 is a substituted or unsubstituted cyclohexylene or cyclohexenylene diradical, R_2 is an alkylene diradical of 7 to 11 carbons, alkenylene diradical of 9 to 11 carbons or an alkadienylene diradical of 11 carbons, R_3 and R_4 can be the same or different and are substituted or unsubstituted acyl radicals of 1 to 18 carbon atoms, alkenoyl radicals of 3 to 11 carbons, alkadienoyl radicals of 6 carbons, hydrocarbon-aroyl radicals of 7 to 11 carbons, alkoxycarbonyl radicals of 2 to 19 carbons and cycloalkoxycarbonyl radicals of 6 to 13 carbons wherein substituents for R_1 are selected from one or more alkyl radicals of 1 to 6 carbons, alkenyl radicals of 4 to 6 carbons, alkadienyl radicals of 6 carbons, $—C(O)OOR_3$, $—C(O)OOR_4$ and carboxy, and the substituents for R_3 and R_4 are selected from lower alkyl.

4,219,677
TELOMERIZATION PROCESS

Emile Kuntz, Lyon, France, assignor to Rhone-Poulenc Industries, Paris, France

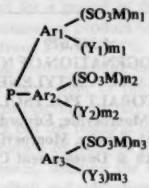
Division of Ser. No. 817,800, Jul. 21, 1977, Pat. No. 4,142,060. This application Jul. 19, 1978, Ser. No. 926,127

Claims priority, application France, Jul. 27, 1976, 76 22824

Int. Cl.[2] C07C *41/10*

U.S. Cl. 568—657 **44 Claims**

1. A process for telomerizing dienes which comprises the step of reacting a diene with a non-aqueous telomerizing compound containing at least one mobile hydrogen atom, said telomerizing agent being selected from the group consisting of an alcohol and a phenol, in the presence of a water-soluble catalytic system comprising at least one water-soluble phosphine having the following formula (I):



wherein Ar_1, Ar_2 and Ar_3 each represent an aryl group having from 6 to 10 carbon atoms, which may be alike or different from each other; Y_1, Y_2 and Y_3, which may be alike or different from each other each represent an alkyl group containing 1 to 4 carbon atoms, an alkoxy group containing 1 to 4 carbon atoms, a halogen, cyano-, nitro-, or hydroxy radical or an amino group

wherein R_1 and R_2, which may be alike or different from each other each represent an alkyl group containing 1 to 4 carbon atoms; M represents a cation which is able to form water-soluble compounds of formula (I) selected from the group consisting of a proton, a cation derived from an alkali metal or an alkaline earth metal, ammonium, a group $N(R_3R_4R_5R_6)+$, wherein R_3, R_4, R_5 and R_6 each represent hydrogen or an alkyl group containing 1 to 4 carbon atoms and may be alike or different from each other, and a cation of any other metal, which is able to form water-soluble salts with benzosulfonic acids; m_1, m_2 and m_3 each represent a whole number from 0 to 5 which may be the same or different from each other and n_1, n_2 and n_3 each represent a whole number from 0 to 3, which may be the same or different from each other, whereby at least one of these numbers n_1, n_2 and n_3 equals at least one and further comprising a compound selected from the group consisting of a transition metal or a transition metal-containing compound which is water soluble or able to be dissolved under conditions of the reaction

---

4,219,678
PROCESS FOR PREPARING PURE METHYL TERT.-BUTYL ETHER

Fritz Obenaus; Wilhelm Droste, both of Marl; Wolf Streubel, Dorsten; Michael Zölffel, and Wolfgang Müller, both of Marl, all of Fed. Rep. of Germany, assignors to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

Continuation of Ser. No. 810,878, Jun. 28, 1977, abandoned. This application Dec. 29, 1978, Ser. No. 974,550

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1976, 2629769

Int. Cl.[2] C07C *41/12, 41/00*

U.S. Cl. 568—697 **5 Claims**

1. A process for the preparation of pure methyl tert.-butyl ether comprising reacting isobutene or isobutene-containing C_4 hydrocarbon mixtures with methanol in a molar ratio of said methanol to said isobutene of 1:1 to 2:1 in the liquid phase at temperatures of between about 30° and 100° C. in a reaction zone on sulfonated strongly acidic, macroporous organic ion exchange resins; separating and removing unreacted C_4 hydrocarbons from the reaction mixture and leaving separated reaction mixture, distilling said separated reaction mixture under pressure of 1.3–30 bar in a distillation column to produce an azeotrope of methanol and methyl tert.-butyl ether as the distillate thereof and pure methyl tert.-butyl ether from the

sump thereof, recycling said distillate formed during the distillation into said zone of the reaction between methanol and isobutene; and withdrawing said pure methyl tert.-butyl ether from the sump of the distillation column.

4,219,679

SELECTIVE HYDROGENATION OF NITRO GROUPS ON NITROAROMATIC ACETYLENES USING AN UNSUPPORTED COBALT POLYSULFIDE CATALYST

Anatoli Onopchenko, Monroeville; Edward T. Sabourin, Allison Park, and Charles M. Selwitz, Monroeville, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Nov. 6, 1978, Ser. No. 958,162
Int. Cl.[2] C07C *79/22, 85/11, 85/24*
U.S. Cl. 568—705 **19 Claims**

1. A process for the production of an aromatic amino compound containing an acetylene group directly connected to an aromatic ring carbon atoms which comprises:

contacting a charge stock comprising an aromatic nitro acetylene compound containing (i) at least one nitro group directly connected to an aromatic ring carbon atom and (ii) at least one acetylenic group having at least two carbon atoms, wherein the acetylene group is directly connected to an aromatic ring carbon atom, and wherein the aromatic portion of said aromatic nitro acetylene compound is selected from the group consisting of benzene, naphthalene, bibenzyl, diphenyl, diphenyl oxide, diphenyl sulfide and benzophenone, in an inert solvent with an unsupported catalyst consisting essentially of cobalt polysulfide and in the added presence of free molecular hydrogen under reaction conditions such that:

(a) the aromatic nitroacetylene and solvent are maintained substantially in the liquid phase;

(b) the weight ratio of the nitroaromatic actylene to cobalt as the metal is at least 25:1;

(c) the reaction temperature is from 60° C. to 140° C.; and

(d) the conversion of said nitroaromatic acetylene is greater than 50 weight percent.

4,219,680

PROCESS FOR OBTAINING PURE 2-(PERFLUOROALKYL)-ETHANOLS FROM THEIR MIXTURES WITH 2-(PERFLUOROALKYL)-ETHYLENES AND POSSIBLY 2-(PERFLUOROALKYL)-ETHYL ESTERS

Inge König, Mühldorf; Horst Streitberger, Altötting; Engelbert Krempl, Burgkirchen, and Ulrich Schwenk, Burghausen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 25, 1979, Ser. No. 60,623
Claims priority, application Fed. Rep. of Germany, Jul. 25, 1978, 2832532
Int. Cl.[2] C07C *31/39*
U.S. Cl. 568—842 **2 Claims**

1. A process for obtaining 2-(perfluoroalkyl)-ethanols of the formula R_f-CH_2CH_2OH from their mixtures with 2-(perfluoroalkyl)-ethylenes of the formula R_f—$CH{=}CH_2$ and possibly with 2-(perfluoroalkyl)-ethylcarboxylic acid esters of the formula R_f—CH_2CH_2OCOR, in which formulae R_f is a mixture of perfluoroalkyl radicals having from 4 to 24 carbon atoms, either branched with methyl in terminal position, or preferably linear, and R is hydrogen, an aliphatic or aromatic radical, which comprises adding to the mixtures an alkanol having from 1 to 8 carbon atoms, or a monoalkyl ether of ethylene-glycol the alkyl radical of which contains 1 to 4 carbon atoms, or mixtures thereof as entrainer, and in the case of 2-(perfluoroalkyl)-ethyl-carboxylic acid esters being present adding furthermore an acidic ester interchange catalyst, and subsequently eliminating selectively the 2-(perfluoroalkyl)-ethylenes by fractional distillation.

4,219,681

PROCESS FOR THE MANUFACTURE OF 2-(PERFLUOROALKYL)-ETHANOLS

Ulrich Schwenk, Burghausen; Inge König, Mühldorf, and Horst Streitberger, Altötting, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 6, 1979, Ser. No. 64,015
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1978, 2834795
Int. Cl.[2] C07C *31/34*
U.S. Cl. 568—842 **5 Claims**

1. A process for the manufacture of 2-(perfluoroalkyl)-ethanols of the formula

$$R_fCH_2CH_2OH$$

wherein

R_f is a linear or terminally methyl-branched perfluoroalkyl having from 1 to 21 carbon atoms from the corresponding 2-(perfluoroalkyl)-ethyl iodides, which comprises reacting these iodides with water and N-methyl-2-pyrrolidone at a temperature in the range of from 100° to 200° C.

4,219,682

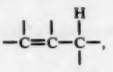
ALKENOL PRODUCTION

Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 651,864, Jan. 23, 1976, Pat. No. 4,039,594, which is a division of Ser. No. 484,261, Jun. 28, 1974, Pat. No. 3,960,973. This application Mar. 29, 1977, Ser. No. 782,600
Int. Cl.[2] C07C *29/00, 33/05*
U.S. Cl. 568—879 **6 Claims**

1. A process for the production of alkenols and cycloalkenols which comprises reacting:

(a) at least one alkene or cycloalkene having at least one allylic hydrogen having the basic structure



and having from 3 to 20 carbon atoms per molecule with

(b) formaldehyde in the presence of

(c) a catalyst selected from the group consisting of palladous cyanide manganese (II) acetylacetonate, vanadium (III) acetylacetonate, vanadyl acetylacetonate, dicyclopentadienyl iron (ferrocene), and μ,μ'-dichlorotetranitrosyldiiron $[Fe(NO)_2Cl]_2$ in a non-aqueous reaction system under reaction conditions including an elevated temperature and pressure sufficient to produce alkenols and cycloalkenols.

4,219,683

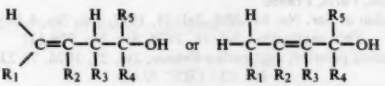
ISOMERIZATION OF UNSATURATED ALCOHOLS

Yulin Wu, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 25, 1978, Ser. No. 945,670
Int. Cl.[2] C07C *33/02, 33/06*
U.S. Cl. 568—906 **9 Claims**

1. An isomerization process which comprises contacting

(a) at least one unsaturated alcohol represented by



wherein each of R_1, R_2, R_3, R_4 and R_5 is selected from hydrogen, alkyl radicals having from 1 to 10 carbon atoms per molecule and aryl and substituted aryl radicals containing from 6 to 14 carbon atoms per molecule with the

substituents being one or more or a mixture of alkyl or cycloalkyl groups containing 1 to 10 carbon atoms, or halogens, with

(b) hydrogen in the presence of

(c) a catalytically effective amount of a catalyst comprising palladium and thorium oxide under isomerization conditions which will form unsaturated isomers of said alcohols.

4,219,684

SYNTHESIS OF ALCOHOLS BY HYDROFORMYLATION WITH NITRILE PROMOTER

Tamotsu Imai, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Apr. 2, 1979, Ser. No. 26,477
Int. Cl.² C07C *29/00*
U.S. Cl. 568—909 **10 Claims**

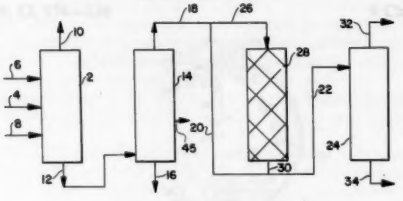
1. A process for the production of an alcohol which comprises reacting an olefinic compound, carbon monoxide and hydrogen in the presence of a chlorodicarbonylrhodium dimer catalyst and a nitrile promoter at reaction conditions, and recovering the resultant alcohol.

4,219,685

IMPROVING ODOR OF ISOPROPANOL

Charles Savini, Warren, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 908,910, May 24, 1978, abandoned, which is a continuation-in-part of Ser. No. 834,240, Sep. 19, 1977, abandoned. This application Apr. 20, 1979, Ser. No. 31,761
Int. Cl.² C07C *29/24*
U.S. Cl. 568—917 **15 Claims**



1. A method for deodorizing isopropyl alcohol wherein isopropyl alcohol is contacted with a deodorizing contact mass consisting essentially of metals or metal oxides incorporated in a porous support wherein said metal oxides are at least partially reduced to metal, said metals and oxides of the metals being selected from the group consisting of Groups IB, VIB and VIII of the Periodic Table and mixtures thereof and said support being selected from the group consisting of Kieselguhr, silica, alumina, silica/alumina, carbon, clay zeolites, refractory oxides, and mixtures thereof, and wherein said deodorizing contact mass has a minimum particle dimension of greater than about 0.01 inch so as to be in a form suitable for use in a fixed bed contacting process.

4,219,686

PROCESS FOR THE PREPARATION OF ALKYLBENZENES

Vincenzo Petrillo, and Andrea Peditto, both of Robassomero, Italy, assignors to Liquichimica Italiana S.p.A., Milan, Italy

Continuation of Ser. No. 841,447, Oct. 12, 1977, abandoned, which is a continuation-in-part of Ser. No. 694,228, Jun. 9, 1976, abandoned. This application Oct. 27, 1978, Ser. No. 955,234
Claims priority, application Italy, Jun. 11, 1975, 24264 A/75
Int. Cl.² C07C *3/56*
U.S. Cl. 585—24 **4 Claims**

1. A method for producing heavy alkylbenzenes and linear dodecylbenzene comprising the steps of auto-condensing a mixture of n-olefins with an internal double bond and having 11 to 14 carbon atoms in the presence of 1% by wt of $AlCl_3$ relative to the weight of said olefins at a temperature of from 80° C. to 105° C. and for a period of from 90 to 100 mins, allowing the autocondensation product to cool to 40° C., adding to said product from 2% to 2.75% by weight of $AlCl_3$ relative to the starting olefins, adding an amount of benzene equal to three times the weight of the starting olefins and saturating the resultant reaction mixture with gaseous hydrogen chloride, carrying out the reaction with benzene at about 40° C.–42° C. for a period of from 50 to 80 mins. to form a mixture of alkylbenzenes, washing the mixture of alkylbenzenes with a caustic alkali and subjecting the washed mixture to fractional distillation to separate the heavy alkylbenzenes and the linear dodecylbenzene.

4,219,687

HYDROALKYLATION OF BENZENE AND ANALOGS

Serge R. Dolhyj, Parma, and Louis J. Velenyi, Lyndhurst, both of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Filed Jul. 26, 1978, Ser. No. 928,220
Int. Cl.² C07C *5/10, 15/12;* C10G *23/02*
U.S. Cl. 585—267 **15 Claims**

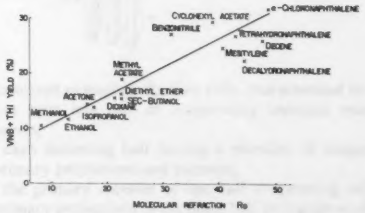
1. A process for producing cycloalkyl aromatics by the hydroalkylation of mononuclear aromatic hydrocarbons comprising contacting a mononuclear aromatic hydrocarbon and hydrogen with a catalyst comprising a rare earth exchanged Y-type zeolite support carrying a promoter comprising at least one of ruthenium, iridium, rhodium and palladium, and at least one element selected from the group consisting of uranium, thorium, Group VIIB, and Group IB elements, said catalyst having been calcined in molecular oxygen containing atmosphere at a temperature of about 250° to 600° C. prior to use.

4,219,688

PROCESS FOR PRODUCING VINYLNORBORNENE AND/OR TETRAHYDROINDENE

Masaya Ogawa, Suita, Japan, assignor to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Sep. 6, 1978, Ser. No. 939,891
Int. Cl.² C07C *13/32, 13/46, 13/54*
U.S. Cl. 585—361 **19 Claims**



1. In a process for producing vinylnorbornene and/or tetrahydroindene by the Diels-Alder reaction between butadiene-1,3 and cyclopentadiene, the improvement which comprises carrying out said reaction in a solvent which has a molecular refraction R_D of 30 or more and a boiling point of 150° C. or higher and which is thermally stable and inert to the reactants as well as to the reaction products.

4,219,689

AROMATIC HYDROALKYLATION CATALYST USING IRIDIUM ON ZEOLITES

Timothy P. Murtha, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 8, 1978, Ser. No. 940,807
Int. Cl.[2] C07C 3/52
U.S. Cl. 585—425 8 Claims

1. A process for producing cycloalkyl aromatic hydrocarbons which comprises contacting at least one aromatic hydrocarbon under hydroalkylation conditions and in the presence of hydrogen with a catalyst consisting essentially of iridium supported on a calcined, acidic, nickel and rare earth-treated crystalline zeolite.

4,219,690

ALKYLATION OF AROMATICS WITH OLEFINS IN THE PRESENCE OF AN ALUMINA CATALYST

Stephen M. Kovach, Ashland, Ky., assignor to Ashland Oil, Inc., Ashland, Ky.

Continuation of Ser. No. 860,503, Dec. 14, 1977, abandoned.
This application Jul. 5, 1979, Ser. No. 55,223
Int. Cl.[2] C07C 3/52
U.S. Cl. 585—467 6 Claims

1. A method for alkylating an aromatic compound having at least one replaceable hydrogen with an olefinic hydrocarbon having between 2 and 12 carbon atoms per molecule, said method yielding a product having an improved concentrations of ortho and para compounds, comprising contacting said aromatic compound with said olefinic hydrocarbon at a temperature between about 25° and about 150° C. in the presence of a catalyst comprising:

(a) manganese in oxide form, the concentration of manganese in elemental form being between about 0.1 and about 4.0 percent by weight; and

(b) between about 0.5 and about 15 percent by weight of boria,

both the boria and the manganese in oxide form being impregnated on an alumina support.

4,219,691

PROCESS FOR PRODUCING OLEFIN OLIGOMER

Hiroshi Mandai, Chiba; Anri Tominaga, Tokyo; Yoshikazu Yoshimura, Ichikawa, and Hiroshi Isa, Yachiyo, all of Japan, assignors to The Lion Fat and Oil Co., Ltd., Tokyo, Japan

Filed Aug. 23, 1978, Ser. No. 936,043
Claims priority, application Japan, Aug. 31, 1977, 52/104413
Int. Cl.[2] C07C 3/18
U.S. Cl. 585—532 4 Claims

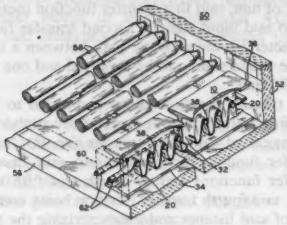
1. A process for producing an olefin oligomer comprising polymerizing one or a mixture of olefins each of which has 6 through 20 carbon atoms in the presence of a catalyst consisting essentially of a reaction mixture of an aluminum halide with a secondary or tertiary alcohol selected from aliphatic and alicyclic alcohols having 3 to 10 carbon atoms, in an amount of 0.05 through 0.95 chemical equivalent of said alcohol, based on 1.0 chemical equivalent of said aluminum halide.

4,219,692

ELECTRIC FURNACE HEATER ASSEMBLY

Albert M. Taylor, Shelbyville, Ind., assignor to Wellman Thermal Systems Corporation, Shelbyville, Ind.

Filed Jul. 20, 1978, Ser. No. 926,447
Int. Cl.[2] F27D *11/02;* H05B *3/00*
U.S. Cl. 13—25 6 Claims



1. A free-standing electric heater assembly for removable installation in the base of an electric furnace below materials placed therein for processing comprising:

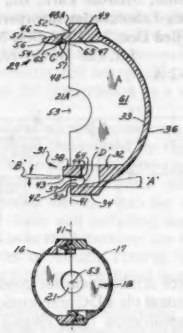
electric resistance heating means; and refractory means for supporting the heating means, said refractory means including means for shielding the heating means from material which may fall from above in the furnace.

4,219,693

CONNECTOR SECURITY COVER ASSEMBLY

Terry W. French, Crawfordsville, Ind., assignor to Cablevision Products Corp., Lafayette, Ind.

Filed Aug. 10, 1978, Ser. No. 932,529
Int. Cl.[2] H02G *15/10*
U.S. Cl. 174—135 6 Claims



1. A connector security cover assembly comprising:

first and second shells, each shell having a socket portion and a latch portion, with the latch portion of the first shell being received and latched in the socket portion of the second shell, and the latch portion of the second shell being received and latched in the socket portion of the first shell, whereby said shells are latched together, said shells having matching edges such that, when latched together, they form a substantially closed chamber;

said cover assembly having at least two apertures at locations on said shell edges at opposite boundaries of said chamber to accomodate conductor means having an axis of symmetry extending through said apertures and in said chamber;

said latch portions having lugs with lug abutments, and said socket portions having retainer abutments abuttingly engaging said lug abutments to latch said shells together;

said lug abutments projecting generally radially inward toward a line extending through said apertures;

said retainer abutments being on retainer bars, there being one such retainer bar in each socket portion, there being an entrance slot between said retainer bar and a wall of said shell at said socket portion,

said lug having a maximum thickness at said abutment thereof sufficient to interfere with said socket portion wall and said bar during insertion of said lug through said slot,

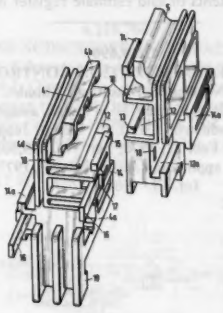
said lug abutments and retainer abutments of said latch and socket portions being entirely inside said chamber after latching, and wall thickness of said shells at said latch and socket portions being greater than elsewhere to preclude resilient deformation sufficient to unlatch said shells whereby said latch portions are immune to unlatching from outside said chamber after said shells are latched together, without destruction of at least part of said cover assembly.

4,219,694

INSULATED MOUNTING FOR LIVE RAILS

Uwe Schulte, Wetter, Fed. Rep. of Germany, assignor to Demag A.G., Duisburg, Fed. Rep. of Germany

Filed Nov. 9, 1978, Ser. No. 959,017
Claims priority, application Fed. Rep. of Germany, Nov. 12, 1977, 2750675
Int. Cl.[2] H01B *17/18;* B60M *5/00*
U.S. Cl. 174—156 12 Claims



1. Insulated mountings for live rails, characterized by

(a) at least one pair of cooperating identical mounting halves;

(b) each mounting half having a plurality of cooperating primary projections and recesses;

(c) the primary recesses of one half cooperating with the primary projections of the other half to engage a rail base;

(d) said plurality of projections on each mounting half including an upwardly and inwardly extending rail base retainer for extending over one half of a rail base; and

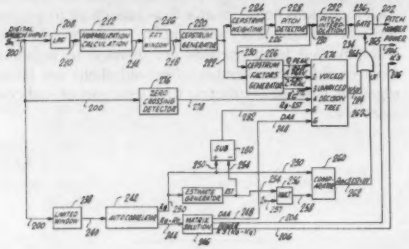
(e) each said mounting half having a plurality of identical secondary projections and secondary recesses on the side thereof opposite said primary projections and recesses for engaging additional mounting halves.

4,219,695

NOISE ESTIMATION SYSTEM FOR USE IN SPEECH ANALYSIS

Arthur L. Wilkes, Woodland Hills; Fred B. Wade, Ventura, and Robert L. Thompson, Thousand Oaks, all of Calif., assignors to International Communication Sciences, Woodland Hills, Calif.

Division of Ser. No. 593,861, Jul. 7, 1975, Pat. No. 4,058,676.
This application Oct. 5, 1977, Ser. No. 839,520
Int. Cl.[2] G10L *1/00*
U.S. Cl. 179—1 P **3 Claims**



1. A noise level estimation system for use with a speech analysis system which derives coefficient parameters by linear prediction, utilizing an intermediate auto-correlation technique which produces a set of auto-correlation coefficients designated R_ϕ through R_p, wherein R_ϕ is the first auto-correlation coefficient, said noise estimation system comprising:

estimate register means;

means for comparing the contents of said estimate register means with said first auto-correlation coefficient and setting said estimate register means to the value of said first auto-correlation coefficient if the value of said first auto-correlation coefficient is equal to or less than the contents of said estimate register means; and

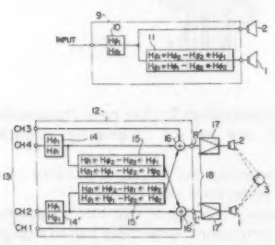
means for incrementing the contents of said estimate register means if said first auto-correlation coefficient is greater than the contents of said estimate register means.

4,219,696

SOUND IMAGE LOCALIZATION CONTROL SYSTEM

Takuyo Kogure, Neyagawa; Masatoshi Shimbo, Nishinomiya, and Toshiyuki Goto, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 21, 1978, Ser. No. 879,503
Claims priority, application Japan, Feb. 18, 1977, 52-19115[U]
Int. Cl.[2] H04R *5/04*
U.S. Cl. 179—1 G **6 Claims**



1. A sound reproducing means for reproducing sounds from two loudspeakers located in front of a listener in a manner in which said listener perceives a sound source being localized at any point around him comprising:

input means for receiving an input sound signal;

first transfer function means connected to receive said input sound signal and apply thereto a first transfer function which is common to both ears of the listener and which is the inverse of the acoustic transfer function which characterizes the acoustic path between one of said loudspeakers and one of the ears of said listener to cancel sound signal information from said input sound signal which causes the listener to perceive that said loudspeakers are located in front of him, said first transfer function means also applying to said input signal a second transfer function which characterizes the acoustic path between a location of an image sound source to be localized and one of the ears of said listener;

second transfer function means connected to the output of said first transfer function means for applying to the output signal of said first transfer function means a third transfer function proportional to said first and second transfer functions and to fourth and fifth transfer functions, said fourth transfer function being common to both ears of said listener and characterizing the acoustic path between said one loudspeaker and the other of the ears of said listener, said fifth transfer function characterizing the acoustic path between said other of the ears of said listener and the desired location of said image sound source, said second transfer function means causing the ratio of sound pressures applied to the left and right ears of said listener and with a time difference of arrival thereat of sounds radiated by said loudspeakers to respectively correspond to the ratio of sound pressures to the left and right ears and with a time difference of arrival thereat of sounds radiated by said image sound source at said location; and,

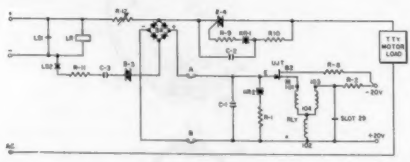
means for respectively applying the output signals from said first and second transfer function means to said loudspeakers.

4,219,697

AUTOMATIC REMOTE OPERATE CIRCUIT

Perd L. Reynolds, Melrose Park, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Dec. 21, 1978, Ser. No. 972,169
Int. Cl.[2] H04M *11/00*
U.S. Cl. 179—2 A **2 Claims**



1. In a control arrangement for conditioning a remote teletypewriter terminal via a DC communication line for receiving data by the application of a ringing current to said line, wherein said teletypewriter includes an alternating current motor operable from a local commercial AC source: a means at said terminal for enabling said teletypewriter comprising;

a bistable relay having a first and a second winding means effective for placing said relay in a first or a second stable state upon energization;

a ringing current detection means operatively connected to said line comprising;

a rectifier means having an output and an input which is connected to the line conductors of said line;

a resistor capacitor time delay network connected to the output of said rectifier means;

a unijunction transistor having a first and a second base and an emitter which latter is connected to one side of said time delay network;

a source of direct current having a positive and a negative output terminal;

said first base connected via said first winding means to the other side of said time delay network and said positive

terminal of said direct current source, said second base connected via a resistor to said negative terminal of said direct current source, whereby upon the application of the rectified ringing current to said emitter said unijunction transistor is rendered conductive to pass a current through said first winding means to thereby operate said relay; and

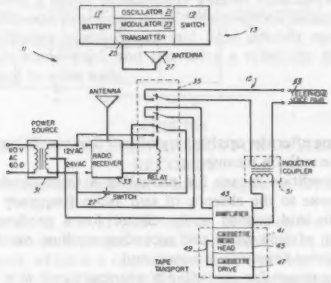
said relay effective upon operation to said first stable state to connect said motor to said commercial AC source, whereby said teletypewriter is in condition to receive data.

4,219,698

REMOTELY ACTUATED TELEPHONE ALARM SYSTEM

Joseph A. Birilli, Carmichael; Dennis DeBacker, and Carl DiStefano, both of Sacramento, all of Calif., assignors to Boreas Electronics, Inc., Sacramento, Calif.

Filed May 22, 1978, Ser. No. 908,259
Int. Cl.[2] H04M *11/04*
U.S. Cl. 179—5 P **14 Claims**



1. An alarm system for use with a telephone system serviced by Touch Tone ® equipment or Touch Tone ® equipment intermixed with digital dialing equipment comprising:

(a) An emergency transmitter unit energizable to generate a modulated RF signal for transmission to a remote location, and

(b) a receiver dialer unit energizable in response to receipt of the modulated RF signal transmitted by the emergency transmitter and adapted to be coupled into a telephone line for automatically dialing a preselected telephone and delivering a prerecorded message into the telephone so dialed, said receiver dialer unit including means for storing and transmitting over the telephone line the electrical equivalent of a series of Touch Tone ® combinations corresponding to the number to be dialed and the message to be delivered,

wherein the means for storing and transmitting the series of Touch Tone ® combinations corresponding to the number to be dialed and the message to be delivered over the telephone line comprises a tape transport unit, said transport unit including a recording tape, said recording tape having recorded thereon a series of audio frequency tones corresponding to the series of Touch Tone ® combinations of the number to be dialed along with the message to be delivered.

4,219,699

TELEPHONE SUPERVISION SYSTEM USING DTMF SIGNALS

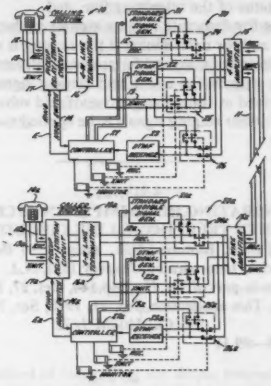
Albert G. Nilssen, Cupertino, and Spencer L. Hermanson, Mountain View, both of Calif., assignors to Wescom, Inc., Downers Grove, Ill.

Filed Oct. 13, 1978, Ser. No. 951,516
Int. Cl.[2] H04Q *1/50, 9/12*
U.S. Cl. 179—16 AA **18 Claims**

1. In a telephone system having multiple subscriber stations, an improved station-to-station supervision system comprising

at least one dual tone multiple frequency (DTMF) signal generator connected to the transmit line at each subscriber station for generating supervisory DTMF signals for transmission to stations remote from the station associated with the DTMF signal generator,

a standard audible signal generator connected to the receive line at each subscriber station for generating dial tone, ringback tone, reorder tone and busy tone for the station associated therewith,



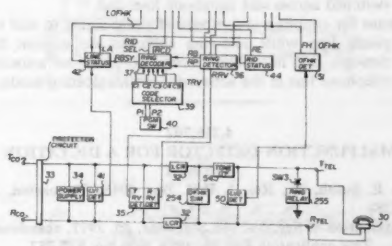
and control means connected to both the transmit and receive lines at each subscriber station for automatically actuating said DTMF signal generator to effect the generation of said supervisory DTMF signals, and for automatically actuating said audible signal generator to effect the generation of said dial tone, ringback tone, reorder tone and busy tone, in response to said supervisory DTMF signals and other selected conditions on the transmit and receive lines.

4,219,700

PARTYLINE SUBSCRIBER INTERFACE CIRCUIT

Guido Panizzon, Edmonton; Jacob Cepelinski, Ottawa; Michael C. J. Cowpland, Ottawa, and Paul S. Wilker, Ottawa, all of Canada, assignors to Mitel Corporation, Ontario, Canada

Filed Sep. 12, 1978, Ser. No. 941,676
Claims priority, application Canada, Mar. 13, 1978, 298723
Int. Cl.[2] H04M *3/16*
U.S. Cl. 179—17 B **45 Claims**



1. A station set interface circuit comprising:

(a) a first pair of terminal means for connection to a multi-party telephone line,

(b) a second pair of terminal means for connection to a subscriber's telephone set,

(c) means connected to the first and second terminal means for detecting the idle or busy status of the multi-party line and in response to a request for service from the subscrib-

er's set for automatically connecting a talking path between the first and second terminal means in the event the status of the line is idle and for causing an open circuit between the first and second terminal means in the event the status of the multi-party line is busy,

(d) means connected to the second terminal means for applying a busy signal to the second terminal means for transmission to the subscriber's set upon the subscriber's set going off hook when the detecting means detects said busy status of the telephone line, and

(e) means for detecting ringing signals at the first terminal means and for determining if the ringing is designative of said subscriber's set, and for automatically connecting said talking path in the event said ringing signals have been determined as being designative of said subscriber's set to allow further ringing signals to be applied to said subscriber's set.

4,219,701

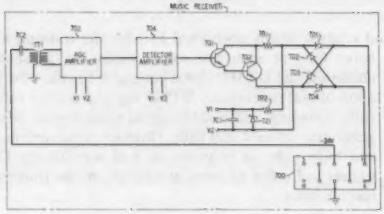
TONE GENERATING HOLD IMPEDANCE CIRCUIT FOR KEY TELEPHONE LINE CIRCUITS

Alexander Feiner, Rumson, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 846,144, Oct. 27, 1977, Pat. No. 4,149,042. This application Sep. 21, 1978, Ser. No. 944,349

Int. Cl.² H04M *1/72*

U.S. Cl. 179—99 H **17 Claims**



1. A two-terminal audio generating hold impedance circuit for use in a key telephone line circuit, said impedance circuit adapted for placing a connected telephone line in an active noncommunicating mode when switched across an associated telephone line in response to a hold request from a connected telephone station, said two-terminal hold impedance circuit comprising:

audio signal producing means self-exciting from dc voltages on said telephone line when said impedance circuit is switched across said telephone line, and

means for coupling said produced audio signal to said telephone line while allowing sufficient dc current flow through said impedance circuit to place an associated telephone line in the active noncommunicating mode.

4,219,702

MALFUNCTION DETECTOR FOR A DICTATION SYSTEM

Jack E. Smith, Jr., Rte. 1, P.O. Box 494S, Thomaston, Ga. 30286

Continuation of Ser. No. 781,358, Mar. 25, 1977, abandoned. This application Jul. 25, 1978, Ser. No. 927,752

Int. Cl.² G11B *27/36*

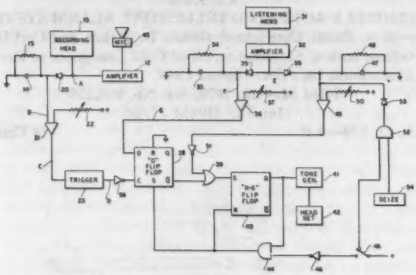
U.S. Cl. 179—100.1 DR **2 Claims**

1. In a recording system having a recording means for recording voice generated signals within a first audio circuit on a recording medium as recorded signals while said recording medium moves relative to said recording means and along a path extending from said recording means to a second location:

first condition means for establishing a first condition within said recording system in response to a magnitude characteristic of said voice generated signals within said first audio circuit;

signal generating means for generating audio frequency signals within a second audio circuit in response to said recorded signals on said recording medium at said second location;

second condition means for providing a second condition within said recording system in response to a magnitude characteristic of a sample of said audio frequency signals within said second audio circuit, said sample of said audio frequency signals being selected a pre-determined length



of time after the establishing of said first condition by said first condition means;

third condition means for providing a third condition in response to the absence of said audio frequency signals within said second audio circuit for a predetermined length of time while said recording medium moves relative to said recording means; and

warning means for providing a warning signal to a user of said recording system in response to said third condition or alternately in response to said first condition and the absence of said second condition.

4,219,703

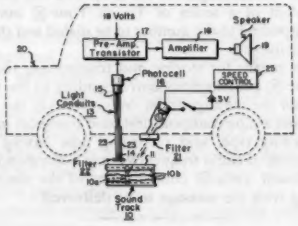
SOUND REPRODUCTION DEVICE FOR TALKING BOOKS

James Linford, Livingston Manor, N.Y., assignor to I-Production Establishment, Vaduz, Liechtenstein

Filed Jul. 12, 1977, Ser. No. 814,859

Int. Cl.² G11B *7/16*

U.S. Cl. 179—100.3 R **12 Claims**



1. A sound reproduction device for reproducing sound recorded on an optical sound track printed on paper comprising:

(a) a movable wheeled vehicle capable of being manually moved along such optical sound track, said vehicle being provided with means for regulating its speed along such track;

(b) a light source substantially restricted to red and infrared light mounted on said vehicle for directing light onto such optical sound track;

(c) a plurality of light conduit means for transmitting light,

said conduit means having input ends mounted on said vehicle and arranged in a substantially linear array transverse to such track for permitting manual movement of said source and said input ends along such optical sound track for simultaneously receiving light from said source incident upon a strip of such optical sound track, said conduit means having output ends arranged in a compact array having a maximum linear dimension substantially less than the length of said linear array;

(d) photosensor means positioned to receive light from said output ends of said light conduit means and capable of providing an output electrical signal substantially proportional to the intensity of light thus received;

(e) amplifier means to receive said electrical signal from said photosensor means and for amplifying said electrical signal; and

(f) loudspeaker means to receive said amplified electrical signal from said amplifier means and for producing output sound responsive to said signal as said vehicle is moved along such optical sound track, said arrangement thus facilitating the reproduction of sound from a sound track having a width substantially greater than the maximum widthwise dimension of said photosensor means thereby facilitating alignment of said light conduit means with such sound track and providing a relatively substantial signal to noise ratio.

4,219,704

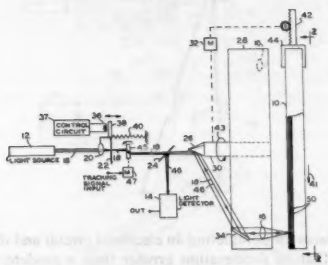
RECORD PLAYBACK APPARATUS FOR OPTICAL DATA RECORDS

James T. Russell, Richland, Wash., assignor to Eli S. Jacobs, New York, N.Y.

Division of Ser. No. 727,369, Sep. 27, 1976, Pat. No. 4,090,031, which is a continuation of Ser. No. 516,453, Oct. 21, 1974, abandoned, which is a continuation-in-part of Ser. No. 375,336, Jul. 2, 1973, Pat. No. 3,891,794. This application Jan. 20, 1978, Ser. No. 871,132

Int. Cl.² G11B *7/00, 21/04*

U.S. Cl. 179—100.3 B **15 Claims**



1. A record playback apparatus for optical data records comprising:

light source means for generating at least one light beam;

a multi-layered optical data record having optical data information spots recorded in tracks on different layers of said record, each track including a plurality of track lines, said record including a base member and a plurality of data layers of different data provided on the same side of said base member and the thickness of said base member being many times the spacing between adjacent data layers;

focusing means for focusing said at least one light beam on said record;

scanning means for scanning said data tracks with said light beam including movable lens means having a plurality of lenses for moving said light beam across said record to cause said scanning, so that each lens scans a different track line;

readout means for transmitting a readout portion of the scanned light beam from said record to at least one light detector means to cause said detector means to produce an electrical readout signal corresponding to the data on the scanned track; and

selection means for selectively reading out one of the data layers of said plurality of data layers provided on said same side of the record to cause the selected data track of one layer to produce the readout signal.

4,219,705

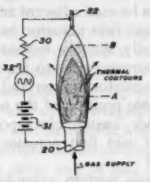
SOUND PRODUCTION USING LARGE VOLUME PLASMAS

Alan E. Hill, Box 5444A Rte. 5, Albuquerque, N. Mex. 87123

Filed Apr. 5, 1978, Ser. No. 893,667

Int. Cl.² H04R *23/00*

U.S. Cl. 179—113 **37 Claims**



1. That method of controlling the shape, temperature distribution, pressure, density, and electrical conductivity of a plasma in air which comprises the steps of:

generating a plasma in air in the glow discharge phase and controlling thermal energy flow to and from said plasma thereby forming a hot interior with steep thermal gradients and density gradients in the boundary area of plasma contiguous the ambient air.

4,219,706

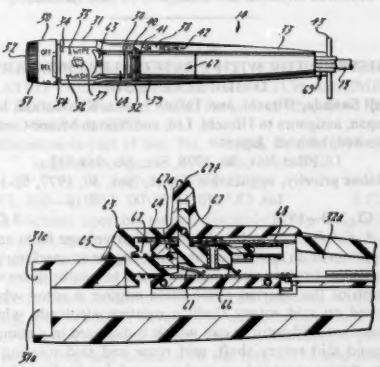
STEERING COLUMN MOUNTED CONTROL STALK WITH MULTIPLE ACTUATORS FOR ROTATABLE AND SLIDE TYPE SWITCHES

David A. Koch, West Bloomfield; Michael G. Moore, Rochester, and Arthur L. Pawlus, Novi, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Jul. 17, 1978, Ser. No. 925,080

Int. Cl.² H01H *9/00*

U.S. Cl. 200—4 **7 Claims**



1. In a vehicle a control stalk assembly mountable on the steering column of a vehicle and having an elongated, rotatable

and axially translatable control lever extending transversely of the longitudinal axis of the steering column,

an elongated hollow handle surrounding said lever and mounting a plurality of slidable, rotatable and axially translatable actuators thereon for operating a plurality of electrical switches controlling a plurality of operating functions in the vehicle,

said handle having a pair of longitudinally slidably movable actuators thereon for a plural slide switch assembly receivable interiorly of said handle and including

a first actuator button attached to a first slide switch of said plural slide switch assembly and longitudinally slidably movable against the force of an internal biasing spring from a first stable position to a second unstable position from which it is returned to its first stable position upon release of the button and

a second actuator button affixed to a second slide switch of said plural slide switch assembly and having

a first portion located adjacent and in the path of movement of said first actuator button to be conjointly longitudinally slidably moved thereby from a first position corresponding to the first stable position of said first actuator button and its slide switch to a second stable position of the second actuator button and its slide switch corresponding to the second position of said first actuator button and its slide switch and

an integral tab portion extending generally radially outwardly of said handle for longitudinal slideable movement of said second actuator button and its slide switch independently of said first actuator button and its slide switch and from the said first stable position of said second actuator button and its slide switch to the said second stable position of the latter slide switch,

said second actuator button further movable exclusively of said first actuator button and its slide switch past the said second stable position of the second slide switch and against the force of another internal biasing spring to a third unstable switch position thereof from which it is returned to its second stable position upon release of the tab portion of that button,

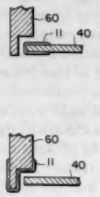
said handle further receiving a rotatable and axially translatable control knob located out of the path of movement of said first and second actuator buttons and projecting from the outer end of the handle opposite the steering column and secured to said rotatable and axially translatable control lever therein for independent rotational and separate axial translational movement of said lever relative to said handle for actuation from said control lever of a multiple rotatable and axially translatable switch assembly mounted adjacent the inner end of said handle.

4,219,707
DISTRIBUTOR WITH COATED ALKALINE EARTH OXIDE ELECTRODE

Hiroji Sawada, Hitachi, and Tatsuo Igawa, Kitaibaraki, both of Japan, assignors to Hitachi, Ltd. and Nissan Motor Company, Limited, both of, Japan

Filed Nov. 30, 1978, Ser. No. 964,817
Claims priority, application Japan, Nov. 30, 1977, 52-142767
Int. Cl.[2] H01H *19/00, 1/00*
U.S. Cl. 200—19 R **3 Claims**

1. A distributor for distributing a high voltage from an ignition system of an internal combustion engine to sparking plugs, comprising: a rotary shaft which rotates in synchronism with a rotation of the internal combustion engine; a rotor which is disposed on said rotary shaft; a rotating electrode which is disposed on said rotor; a cap which is disposed in a manner to surround said rotary shaft, said rotor and said rotating electrode; means mounted on said cap and for leading the high voltage from the ignition system to said rotating electrode; and a plurality of fixed electrodes which are arranged so as to oppose to said rotating electrode through very small gaps with a rotation of said rotor and which supply the distributed high voltage to the corresponding sparking plugs; a filmy layer including at least one oxide from the group consisting of alka-

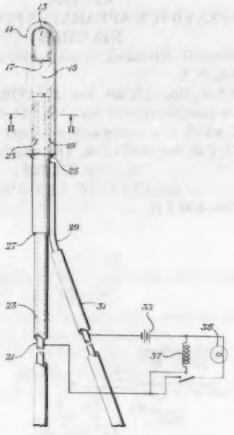


line-earth metals of barium, strontium and calcium being formed on a surface of at least either of a discharge portion of said rotating electrode and said each fixed electrode.

4,219,708
SHOCKSWITCH

Ulyss R. Rubey, Lewisville, Tex., assignor to Detectors, Inc., Graham, Tex.

Filed Feb. 12, 1979, Ser. No. 11,125
Int. Cl.[2] H01H *35/14*
U.S. Cl. 200—61.47 **2 Claims**



1. Apparatus for completing an electrical circuit and thereby indicating that an acceleration greater than a predetermined acceleration has occurred, consisting of:

a. a housing having therewithin an eleongate bore of substantially the same dimensions from a first end containing a reservoir of liquid to a second end containing electrical contacts;

b. a body of gas contained in said bore adjacent said second end;

c. a deformable reservoir of an electrically conductive liquid contained in said first end of said bore in the form of a droplet that extends laterally across said bore and adjacent said body of gas so as to define an interfacial barrier therebetween; the interfacial tension and the interfacial barrier being defined such that an acceleration greater than the predetermined acceleration effects rupture of the interfacial barrier such that at least a portion of the liquid escapes from the reservoir;

d. said electrical contacts including first and second electrical contacts disposed within said gas in said bore and closely adjacent each other with a gap therebetween such

that no electrical circuit is possible therethrough until said liquid bridges said gap; said first and second contacts being disposed both in said second end in said bore such that when said at least a portion of the liquid escapes from the reservoir, an electrically conducting bridge is formed by the liquid between the first and second contacts; and

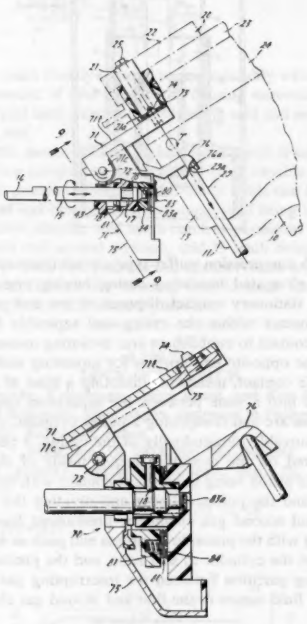
e. means for conducting electricity to the first contact from the second contact for electrically communicating that the bridge has been formed and that said predetermined acceleration has been received; said contacts comprising a metallic wire centrally disposed in a metallic tube; said metallic tube being disposed about and electrically insulated laterally from said wire; and wherein said liquid comprises mercury that wets said metal wire and said metal tube such that once said acceleration has occurred and established said conductive bridge of said mercury between said contacts, a greater negative acceleration is required to return said at least a portion of said liquid to its original position and said indication of said acceleration remains.

4,219,709

STEERING COLUMN MOUNTED CONTROL STALK MOTION TRANSLATION ASSEMBLY FOR OPERATING SWITCHES

William D. Scarbro, Royal Oak, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Jul. 17, 1978, Ser. No. 925,079
Int. Cl.[2] H01H *9/00*
U.S. Cl. 200—61.54 **3 Claims**



1. In combination,
a vehicle steering column,
a turn signal switch having
a stationary portion affixed to one end of the column and
a movable contactor portion pivotally movably mounted on and relative to said stationary portion about a first axis extending longitudinally of the steering column,
a headlamp beam selection switch having a depressible spring-biased plunger thereon and mounted on the steering column at a location longitudinally displaced from said turn signal switch,
an actuation rod mounted for reciprocation on and extending longitudinally of the steering column and having one end thereof in engagement with the plunger of said headlamp beam selection switch for depressible actuation thereof upon longitudinal reciprocation of the rod.
a control lever extending transversely of the longitudinal axis of the steering column and swingably movable in a first plane transverse to the axis of said column and in a second plane intersecting and mutually orthogonally related to said first plane and a
motion translating assembly enabling selective actuation of said turn signal switch independently of said beam selection switch from swingable movement of said control lever in said first plane and selective actuation of said beam selection switch independently of said turn signal switch from swingable movement of said lever in said second plane,
said motion translating assembly having
a first portion drivingly coupled at one end to said movable contactor portion of said turn signal switch for rocking said movable turn signal contactor portion about said first axis upon swingable movement of said control lever in said first plane and
a second portion affixed to said control lever and pivotally coupled to the other end of said first portion of said motion translating assembly for movement relative thereto on a second axis spaced from and normal to said first axis upon swingable movement of said control lever in said second plane, said second portion of said motion translating assembly having an actuator thereon extending inwardly toward the steering column and engaging the other end of said reciprocable actuation rod the longitudinal axis of which is aligned in axial registration with said first axis corresponding to the pivot axis of the movable portion of said turn signal switch,
a drive post secured to and having a slotted end extending through said movable contactor portion at the said first axis corresponding to the pivot axis of said turn signal switch,
a threaded nut attached to the said one end of said first portion of said motion translating assembly and having an upstanding drive nib thereon received within the slotted end of said drive post, and
a threaded fastener screw extending through said drive post and into said threaded nut on the said first portion of said motion translating assembly for securing the motion translating assembly to the movable contactor portion of said turn signal switch.

4,219,710

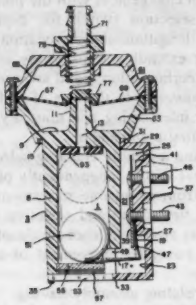
PRESSURE CHANGE RESPONSIVE SENSOR AND RELATED VACUUM OPERABLE SWITCH ASSEMBLY

Robert G. Booth, Oakland, Calif., assignor to Stop Alert Corporation, Oakland, Calif.

Continuation-in-part of Ser. No. 440,831, Feb. 8, 1974. This application Apr. 15, 1976, Ser. No. 677,281
Int. Cl.[2] H01H *35/34*
U.S. Cl. 200—81 R **3 Claims**

1. A vacuum operable switch assembly comprising a housing, a switch, means in said housing normally maintaining said switch in a predetermined status, means responsive to an externally developed condition of reduced pressure for developing a predetermined condition of reduced pressure within said housing, said means for developing such predetermined condition of reduced pressure in said housing including a passageway connecting said means with the interior of said housing, said switch status maintaining means being responsive to such predetermined condition of reduced pressure, to change the status of said switch means and block said passageway, and

resilient valve means between said switch status maintaining means and the proximate end of said passageway for absorbing impact of said switch status maintaining means and for facilitating reestablishment of communication between said passageway and the interior of said housing as said reduced pressure developing means is restored to its pre-responsive condition, said resilient valve means including open cell resilient material.



4,219,711

AXIAL BLAST PUFFER INTERRUPTER WITH MULTIPLE PUFFER CHAMBERS

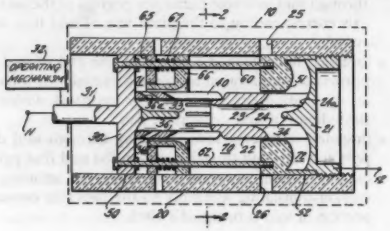
Lorne D. McConnell, Chalfont, Pa., assignor to I-T-E Imperial Corporation, Spring House, Pa.

Division of Ser. No. 552,106, Feb. 24, 1975, Pat. No. 3,987,261. This application Oct. 12, 1976, Ser. No. 731,421

The portion of the term of this patent subsequent to Oct. 19, 1993, has been disclaimed.

Int. Cl.[2] H01H *33/88*

U.S. Cl. 200—148 A **6 Claims**



1. A puffer type circuit interrupter comprising, in combination:

a hollow support cylinder filled with a dielectric fluid;

first and second axially spaced pistons axially slidably disposed within said support cylinder;

an axially fixed barrier disposed across said support cylinder and disposed between said first and second pistons to define first and second fluid-filled volumes of variable size with said first and second pistons, respectively;

a relatively fixed contact disposed within said support cylinder and adjacent said one end thereof;

a hollow tubular relatively movable contact disposed within said support cylinder and axially movable into and out of engagement with said relatively fixed contact; said relatively movable contact being connected to and axially movable with said first and second piston; the interior of said hollow tubular movable contact communication between said first and second volumes and forming therefor fluid flow path therebetween, whereby movement of said movable contact out of engagement with said fixed contact causes the enlargement of said first volume and the decrease of said second volume, whereby fluid flows through said hollow movable contact and from said second volume into said first volume;

said relatively movable and fixed contacts engaging one another in a central region within said insulation cylinder which is disposed within said second fluid-filled volume;

the space between said fixed and movable contacts being swept by said fluid flow from said second volume to said first volume during the opening operation of said interrupter.

4,219,712

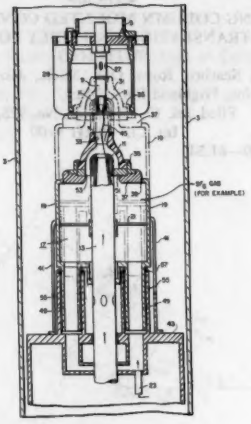
HIGH COMPRESSION PUFFER CIRCUIT INTERRUPTER

Werner S. Emmerich, Churchill Borough, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 1, 1978, Ser. No. 902,009

Int. Cl.[2] H01H *33/70*

U.S. Cl. 200—148 A **4 Claims**



1. A high compression puffer-type circuit interrupter comprising an elongated insulating casing having opposite end portions, a stationary contact disposed at one end portion, a movable contact within the casing and separable from the stationary contact to establish an arc, mounting means extending from the opposite end portion for mounting and moving the movable contact, means for directing a blast of an interrupting gas into a zone between the separating contacts to extinguish an arc and comprising a puffer cylinder, the cylinder being movable longitudinally of the casing, a piston slidably mounted on the mounting means inside of the puffer cylinder, the piston being in gas-tight contact with the mounting means and the puffer cylinder and dividing the cylinder into first and second gas chambers, pressurized fluid means cooperating with the piston to compress and push an interrupting gas from the cylinder to said zone, and the piston being a rigid floating partition between the interrupting gas and the pressurized fluid means in the first and second gas chambers.

4,219,713

CIRCUIT BREAKER WITH HIGH SPEED TRIP LATCH

Alfred E. Maier, and Louis N. Ricci, both of Beaver Falls, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 30, 1976, Ser. No. 755,766

Int. Cl.[2] H01H *3/46*

U.S. Cl. 200—153 G **5 Claims**

1. A circuit breaker comprising:

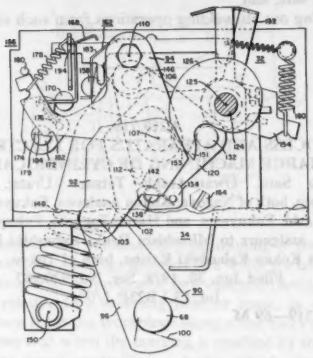
a pair of contacts including stationary and movable contacts

operable between open and closed positions and being biased in the open position;

means for effecting movement of said contacts between said open and closed positions including toggle means comprising first and second links and toggle lever; and

releasable toggle latch means for holding said toggle means in toggle position comprising:

a rod having a flat surface thereon adjacent to, and contacting, said toggle lever and rotatable between first and second position, said rod flat surface, when in said position, preventing movement of said toggle lever, said rod flat surface, when in said second position, permitting movement of said toggle lever such that said toggle means are capable of being released from toggle position;



a latch catch fixedly secured to and rotatably with, said rod, movement of said latch catch causing movement of said rod, said latch catch being biased in said rod second position; and

releasable means for holding said latch catch in said rod first position comprising a rotatable D-latch capable of being in a first position wherein said D-latch holds said latch catch in said rod first position and capable of being in a second position wherein said latch catch is permitted movement to said rod second position, said D-latch being biased in said D-latch first position and a latch release lever secured to said D-latch for rotating said D-latch between said D-latch first and second positions.

4,219,714

LOCK-OFF SWITCH

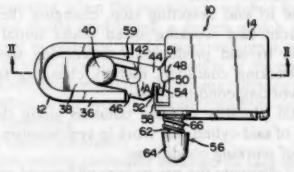
Hideo Suzuki, Yokohama; Touru Kasai, and Ken Matsumoto, both of Kawasaki, all of Japan, assignors to Fujisoku Electric Co., Ltd., Kawasaki, Japan

Filed Sep. 19, 1978, Ser. No. 943,683

Claims priority, application Japan, Sep. 20, 1977, 52-126691[U]

Int. Cl.[2] H01H *3/20, 13/08*

U.S. Cl. 200—157 **8 Claims**



1. A lock-off switch comprising:

a switch case,

a slider which is urged outwardly from the switch case and which can be locked at an off position,

a lock means rockably attached to the slider and engageable therewith in a locking position for preventing the slider from being pulled, and

a release means penetrating into the switch case through one side thereof and coupled to the lock means, said release means being normally urged so as to hold the lock means in engagement with the slider in said locking position and, when pushed against said normal urging, rocking the lock means so as to disengage the lock means from the slider locking position thereof, thereby to allow the slider to be pulled.

4,219,715

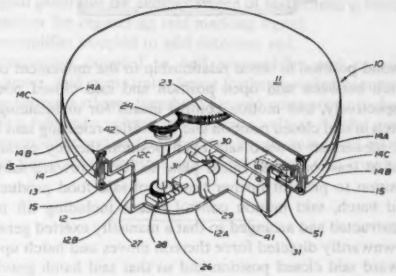
MICROWAVE POWERED TURNTABLE FOR MICROWAVE OVENS

Gary B. Mandle, 508 El Camino Real #4, Burlingame, Calif. 94010, and Peter D. Jurgensen, 140 Northam Ave., San Carlos, Calif. 94070

Filed Jul. 24, 1978, Ser. No. 927,607

Int. Cl.[2] H05B *9/06*

U.S. Cl. 219—10.55 F **12 Claims**



1. Apparatus for moving articles in a microwave environment comprising:

a platform for mounting articles;

a base for mounting the platform;

motor means within the base;

transmission means, driven by the motor means and connected to the platform, for moving the platform relative to the base;

power conversion means for converting microwave energy to energy usable by the motor means; and

power modifying means for connecting the power conversion means to the motor means to power the motor means.

4,219,716

BOTTOM ENTRY OVEN

Harold B. Kaufman, Jr., New York, and John P. McCarthy, College Point, both of N.Y., assignors to DCA Food Industries, Inc., New York, N.Y.

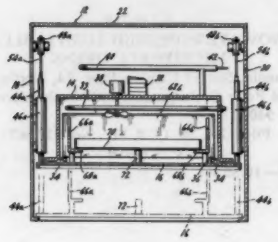
Filed Apr. 26, 1978, Ser. No. 900,179

Int. Cl.[2] H05B *9/06;* **F24C** *15/16;* **A21B** *2/00, 3/02*

U.S. Cl. 219—10.55 R **17 Claims**

7. An oven for providing uniform energy exposure to food products successively loaded therein comprising, a heating cavity structure having a bottom opening therein, a bottom hatch mounted for relative movement with respect to said cavity between an open lowered position and a closed raised position, energy means coupled to said cavity for heating food products to be placed within said cavity over successive heating cycles, said hatch being constructed and arranged so that said food products can be loaded thereon from outside said oven when said hatch is lowered to said open position and said food products are moved into said cavity as said hatch is raised

to said closed position, at least one heat shield plate mounted within said cavity for rotational movement with respect to said bottom opening between a first position wherein said at least one heat shield plate is substantially horizontally disposed with respect to said bottom opening to prevent heat from radiating from said cavity onto said food products when said hatch is in said open position, and a second position wherein said at least one heat shield plate is substantially vertically disposed within said cavity so that said food products can be heated within said cavity by said energy means when said hatch is in said closed position, actuator means coupled to said hatch for moving said at least one heat shield plate between said first position and said



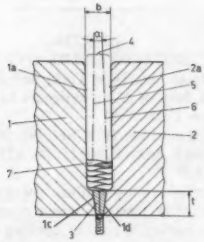
second position in timed relationship to the movement of said hatch between said open position and said closed position, respectively, and motion control means for maintaining said hatch in said closed position and thereafter releasing said hatch for movement toward said open position thereby permitting said at least one heat shield plate to rotate toward said first position to prevent further heating of said food products on said hatch, said motion control means including lift means constructed and arranged so that a manually exerted generally downwardly directed force thereon moves said hatch upward toward said closed position and so that said hatch gravitates toward said open position at the end of each of said heating cycles.

4,219,717

METHOD OF CONNECTING METALLIC PARTS BY MEANS OF ARC FUSION WELDING

Gottfried Kuhnen, Oberrohrdorf, Switzerland, assignor to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Jun. 22, 1977, Ser. No. 809,122
Claims priority, application Switzerland, Jul. 2, 1976, 8490/76
Int. Cl.[2] B23K *09/18*
U.S. Cl. 219—61 **31 Claims**



1. A method of interconnecting metallic parts by means of arc fusion welding with a low volume welding seam (narrow gap welding) comprising the steps of:

providing workpiece parts which are to be interconnected and forming a narrow gap between workpiece flanks of the workpiece parts;

initially producing by welding a base seam at a butt joint of the workpiece parts;

thereafter interconnecting the flanks of the workpiece parts forming the narrow gap by alternately applying to one and the other workpiece flank welding beads by means of submerged arc-welding which constitutes a different type of welding technique than the initial welding operation;

depositing each welding bead during the submerged-arc welding upon one another in such a manner that each deposited welding bead overlaps the immediately therebelow situated welding bead at the intermediate third region of the narrow gap, while only one of the workpiece flanks is caused to fuse;

employing workpiece parts which are only accessible from one side; and

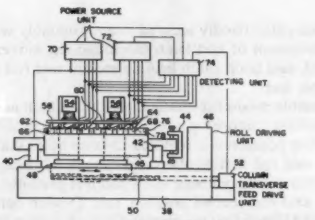
carrying out all welding operations from such side.

4,219,718

PROCESS AND APPARATUS FOR ELECTRICAL DISCHARGE MACHINING OF CYLINDRICAL WORK

Kunihiko Sato, Owari-Asahi; Tetsuro Urata; Tetsuhiro Asamoto, both of Nagoya; Kobun Asakawa, Fukuyama; Takeo Uebayashi, Fukuyama, and Haruo Taguchi, Fukuyama, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha and Nippon Kokan Kabushiki Kaisha, both of Tokyo, Japan

Filed Jun. 30, 1978, Ser. No. 920,987
Int. Cl.[2] B23P *1/08*
U.S. Cl. 219—69 M **5 Claims**



1. In an electrical discharge machining process wherein a plurality of head columns each having a plurality of electrodes disposed to face a cylindrical work are provided, and said plurality of head columns are moved along the axis of rotation of said cylindrical work by column transverse feed drive means to give a satiny finish to an outer surface of said cylindrical work, the improvement comprising:

determining working conditions for an initial working period so as to set a working speed for the initial working period to a value smaller than a predetermined desired working speed under a steady working condition;

detecting initiation of discharge between every one of the plurality of electrodes mounted on said head columns and said cylindrical work;

in response to said detecting step, changing the working speed from said working speed under initial working condition to said predetermined working speed under steady working condition, thereby changing said determined working conditions; and

moving said plurality of head columns along the axis of rotation of said cylindrical work in synchronism with said change of working conditions;

whereby to eliminate the occurrence of stepped portions on the surface of said cylindrical work due to a difference in the number of times of working during the initial working period between said head columns.

4,219,719

METHOD AND APPARATUS FOR AUTOMATICALLY POSITIONING A WORKPIECE RELATIVE TO A SCANNING FIELD OR MASK

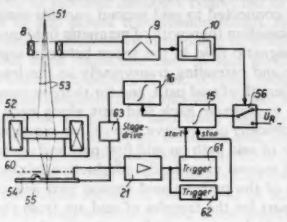
Jürgen Frosien, Berlin, Fed. Rep. of Germany, and Helmut Reschke, deceased, late of Berlin, Fed. Rep. of Germany (by Paul Reschke and Flora Reschke, administrators), assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 6, 1978, Ser. No. 912,982

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1977, 2726173

Int. Cl.[2] **B23K** *15/00, 26/00;* **G05B** *1/00*

U.S. Cl. 219—121 EM **10 Claims**



1. In a method for automatically positioning a workpiece having at least one marking, specifically a wafer for integrated circuits which is to be processed in a charged-particle beam apparatus, relative to a scanning field or mask, in which a scanning beam scans the workpiece along a line and a marking signal is generated when the marking is reached by the beam, said marking signal controlling a device which generates a control signal in response to the marking signal, said control signal being proportional to the deviation of the marking position from a reference position and driving a device for correcting the position of the workpiece relative to the scanning field or mask, the improvement comprising the steps of

scanning the workpiece by the scanning beam successively in opposite directions at the same velocity through a forward sweep and a return sweep;

integrating a positive reference voltage in an integrator during said forward sweep of said beam from the beginning of the line scanned until the marking on said workpiece is reached by said beam;

integrating a negative reference voltage having the same magnitude as said positive reference voltage in said integrator during said return sweep of said beam from the end of the line scanned by said beam until the marking on said workpiece is reached by said beam; and

generating an output control signal by means of said integrator after a full forward and return sweep of said scanning beam over said workpiece for correcting the position of said workpiece relative to said scanning field or mask.

9. An apparatus for automatically positioning a workpiece having at least one marking, specifically a wafer for integrated circuits which is to be processed in a charged-particle beam apparatus, relative to a scanning field or mask, which workpiece is scanned by a scanning beam along a line and a marking signal is generated when the marking is reached by the beam, said marking signal controlling a device which generates a control signal in response to the marking signal, said control signal being proportional to the deviation of the marking position from a reference position and driving a device for correcting the position of the workpiece relative to the scanning field or mask, comprising

a digital signal generator;

a digital-to-analog converter coupled to said digital signal generator;

a beam deflection system coupled to said digital-to-analog converter for deflecting said beam in a linear scan across said workpiece in equidistant steps;

a square-wave signal generator coupled to said digital signal generator;

a bidirectional counter, coupled to said square-wave signal generator and to said digital signal generator, for counting said scanning steps of said beam, said square wave generator controlling the direction and the start of counting by said bidirectional counter;

a control device coupled to said square-wave signal generator, said digital signal generator, and said counter;

switch means coupled to said counter and adapted to be controlled by said control device, said control device closing said switch means after a full forward and return sweep of said scanning beam;

a storage control device, coupled to said switch means, the final count of said counter being transmitted to said storage device when said switch means is closed by said control device;

a digital-to-analog converter, coupled to said storage control device, for generating an output control signal in response to said final count and correcting the position of said workpiece, said control device resetting said counter to zero after said final count of said counter is transmitted to said storage control device and restarting said digital signal generator for another sweep of said scanning beam;

a detector for registering said marking signal;

a preamplifier coupled to said detector; and

a comparator coupled to said preamplifier and to said counter, said comparator being further coupled to means for setting a trigger threshold for said comparator including a reference voltage source and a voltage divider, said preamplifier and said comparator transforming said marking signal into a control signal for stopping said counter.

4,219,720

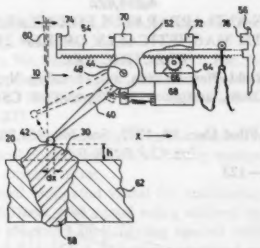
ENERGY BEAM WELDING WITH FILLER MATERIAL

Clauspeter Moench, Grafrath, Fed. Rep. of Germany, assignor to Steigerwald Strahltechnik GmbH, Munich, United Kingdom

Filed Jul. 6, 1978, Ser. No. 922,504

Int. Cl.[2] **B23K** *15/00, 26/00, 9/12*

U.S. Cl. 219—121 EM **5 Claims**



1. A method of energy beam welding of two workpiece edges which form a gap the width of which varies in an irregular manner, said method comprising the steps of directing an energy beam to the gap to produce a welding zone, moving the beam relative to the workpiece to produce a weld seam including a solidified weld bead, and supplying a filler material to the welding zone to make up the volume of the gap, wherein the cross-sectional area of the solidified weld bead is determined and the feeding rate of the filler material is adjusted to keep the cross-sectional area of the weld bead between upper and lower limits.

4,219,721

MARKING OF LENSES

Melvin E. Kamen, Woodcliff Lake, N.J.; Morris Bernfeld, Long Island City, N.Y., and John C. Pelc, Richmond, Va., assignors to Revlon, Inc., New York, N.Y.

Filed Aug. 23, 1978, Ser. No. 936,082
Int. Cl.[2] B23K 27/00
U.S. Cl. 219—121 LM 1 Claim

1. In a method for marking plastic lenses composed of polymethyl methacrylate which comprises:

passing a laser beam through a mask having selected openings permitting the passage of the beam, said mask being composed of a material impervious to laser beams, and

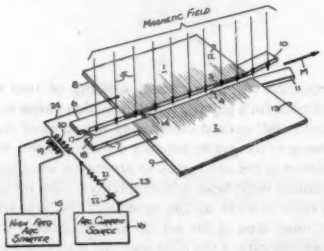
passing the selected laser beam through a focussing lens to focus said beam onto the plastic lens retained in a holder, said focussing lens being composed of material which will trasmit infrared radiation in the 10.6 micron range, the improvement wherein said plastic lens is held in a holder comprising a cylindrical body portion and a plurality of prongs extending upwardly therefrom, each prong having an inner ledge set at a predetermined height above the top surface of the body portion, and an upwardly projecting wall beyond the ledge, said wall being slanted outwardly to the top portion of the prong.

4,219,722

METHODS AND APPARATUS FOR HEATING METAL PARTS WITH MAGNETICALLY DRIVEN TRAVELLING ELECTRIC ARC

Wallace C. Rudd, New Canaan, and Humfrey N. Udall, Darien, both of Conn., assignors to Thermatool Corp., Stamford, Conn.

Filed Dec. 19, 1977, Ser. No. 861,703
Int. Cl.[2] B23K 9/08
U.S. Cl. 219—123 59 Claims



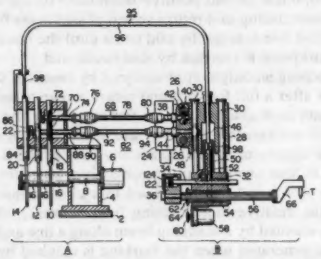
1. In apparatus for electrically heating a first metal part along a path of finite length on a surface of said part and having opposite ends and a second metal part along a path of finite length on a surface of said second part and having opposite ends, by means of an electric arc extending in the length direction thereof, between said surface of said first metal part and said surface of said second metal part, said surface of said second metal part extending for the length of and adjacent but in spaced relation to said surface of said first metal part and said first part and said second part being in stationary relation to each other, one end of said arc impinging on, without melting, said surface of said first metal part and the opposite end impinging on, without melting, said surface of said second metal part, said apparatus including arc current means having terminals at different potentials, one connected to said first part and another connected to said second part for sustaining said arc, the combination therewith of magnetic field means for producing a magnetic field in the space between said part and said member and extending transversely to the length of said arc and the length of said path, and for thereby causing the ends of said arc to traverse each said part along each said path, and first electrically conductive, run-off tab means at at least one of said ends of said path on said first part and coupled to said first part and second electrically conductive tab means at at least one end of the path on said second part and coupled to said second part for the transfer of said arc from the path on each part to said tab means, said first tab means being adjacent to but spaced from said second part, whereby at one end of each said path, at least one end of said arc impinges on one of said tab means, said magnetic field means also including means for producing a magnetic field extending transversely to the length of said arc in the positions thereof in which it impinges on said tab means, for causing said end of said arc to transverse at least part of said tab means.

4,219,723

AUTOMATIC WELDING MACHINE WITH THREE-DIMENSIONAL CAM DRIVEN MOTION

Nobuji Maezawa, Sayama; Tadashi Takeo, Sakado, and Shogo Ozawa, Iruma, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 6, 1978, Ser. No. 939,975
Claims priority, application Japan, Sep. 10, 1977, 52/122196[U]; Oct. 15, 1977, 52/138412[U]; Oct. 15, 1977, 52/138413[U]; Oct. 15, 1977, 52/138414[U]
Int. Cl.[2] B23K 9/12
U.S. Cl. 219—125.1 7 Claims



1. An automatic welding machine of a type, wherein a welding torch is subjected to predetermined three-dimensional locus motions by means of three profile cams for controlling movement of the torch in the left-and-right, up-and-down, and front-and-back directions in accordance with predetermined programs set in the machine, which comprises in combination:

(a) a driving section including:

(1) a frame to support component members thereon;

(2) a shaft rotatably held on said frame;

(3) an electric motor axially fitted at one end of said shaft;

(4) a plurality of profile cams fixedly provided on the other end part of said shaft to be rotated therewith, said profile cams being arranged with an appropriate space interval between them;

(5) cam follower members corresponding in number to said profile cams and intimately contacted therewith to move in accordance with rotational movement of said profile cams; and

(6) a plurality of power transmission means operatively connected to said cam follower members to transmit the driving force from each of said cam follower members in said driving section to movable members; and

(b) a driven section including:

(1) a frame to support component members thereon;

(2) a plurality of movable members connected to respective ones of said power transmission means, including three members which move in response to driving force transmitted from respective ones of said profile cams via cam follower members in said driving section, one of said three members being movable in the left-and-right direction, another of said three members being movable in the up-and-down direction and the last of said three members being movable in the front-and-back direction, a first of said three members carrying a second of said three members, the second of said three members carrying a third of said three members, the third member constituting a torch-carrying movable member;

(3) a welding torch carried by said torch-carrying movable member, said torch being carried by a rotatable cylindrical member carried by said torch-carrying movable member; and

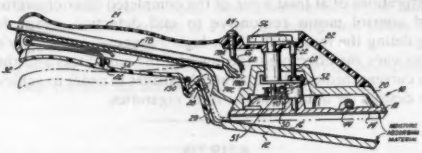
(4) an electric motor to tilt said torch through a linking means extended between said motor and said rotatable cylindrical member.

4,219,724

THERMOSTATICALLY CONTROLLED ELECTRICALLY HEATED HAND TOOL FOR PRESSING GARMENTS

Bertil Allvin, Asgatan 9, 710 60 Grythyttan, Sweden

Continuation-in-part of Ser. No. 760,826, Jan. 21, 1977, abandoned, which is a continuation of Ser. No. 628,993, Nov. 5, 1975, abandoned. This application Aug. 8, 1977, Ser. No. 822,900
Claims priority, application Sweden, Nov. 13, 1974, 7414224
Int. Cl.[2] D06F *75/30*; H05B *3/02*
U.S. Cl. 219—243 **6 Claims**



1. A manually operable device for pressing fabric, said device comprising:

a pair of jaws, each of said jaws having a flat surface portion, said surface portions constituting the pressing surfaces of the device, one of said jaws being hollow and the other being a flat solid plate;

an elongate handle for each of said jaws, each of said handles being secured at one end to a respective one of the jaws;

hinge means pivotally joining said handles so that said flat surface portions face each other for selectively pivoting the jaws into the positions in which the flat surface portions of the jaws are in parallel pressure engagement, said positions constituting the working position of the device or into positions in which said flat surface portions are separated from each other, said latter position being the loading position for inserting fabric to be pressed between said flat surface portions;

spring means coacting with said handles for biasing the flat surface portions into one of said two positions;

electric heating means included in the hollow one of said jaws for heating the flat surface portion thereof;

an electric connecting cable extending lengthwise through the handle secured to the hollow jaw including the heating means;

adjustable thermostatic control means mounted on the hollow jaw and coacting with said heating means for selectively adjusting the heat output thereof; and

indicating means for indicating when said heating means in energized, said electrical heating means comprising a tunnel structure in the hollow jaw and a resistance wire in the tunnel structure,

said electric connecting cable comprising a three wire cable, one end of the first and second wires being adapted to be connected to an electric outlet and one end of the third wire being adapted to be grounded, the second ends of said first and second wires being connected to the end of said resistance wire and the other end of said third wire being connected to the hollow jaw,

said adjustable thermostatic control means comprising a thermostat connected electrically in series with said first wire and in thermal contact with the hollow jaw,

said indicating means comprising the combination of a neon bulb in series with a resistor, said combination being in parallel with said resistance wire,

said jaws being of triangular shape, said handle for each jaw extending therefrom at the base of the respective jaw of triangular shape, said hollow jaw having an upper surface remote from the solid jaw, said adjustable thermostatic control means further comprising a control dial disposed at said upper surface, said neon bulb being mounted adjacent said dial and visible from above said hollow jaw,

said hollow jaw comprising a sole plate having a flat pressing surface and provided with said tunnel structure, an intermediate cover member on said sole plate and covering said thermostat, a housing member on said intermediate cover member and integral with said handle for the hollow jaw, and attachment means securing said housing member, said cover member and said sole plate together as a unitary assembly to form said hollow jaw, said upper surface of the hollow jaw being constituted by the upper surface of the housing member.

4,219,725

HEATING APPARATUS FOR VAPORIZING LIQUEFIED GASES

Greg D. Groninger, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 827,275, Aug. 24, 1977, Pat. No. 4,163,371. This application Aug. 1, 1978, Ser. No. 930,105
Int. Cl.[2] H05B *1/02*; F17C *7/02*; F22B *1/28*
U.S. Cl. 219—272 **7 Claims**

1. An apparatus for vaporizing a mixture of two liquefied gases in chemical equilibrium with a binary compound thereof comprising in combination:

(a) an enclosed elongated vessel for containing the mixture to be vaporized, said vessel being defined by a generally vertically disposed shell having spaced walls defining a lower liquid zone and an upper vaporized gas zone;

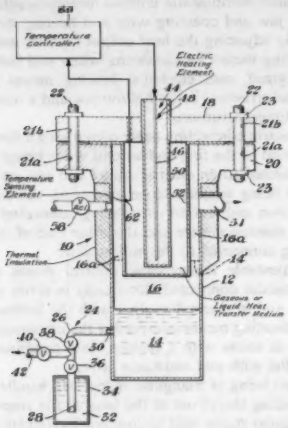
(b) liquid supply means in fluid communication with the liquid zone of said vessel adapted to pass the mixture to be vaporized as a liquid from a supply source into the vessel;

(c) a generally vertically disposed heating element in said vessel and extending downwardly through the vaporized gas zone of said vessel and terminating above that portion of the liquid zone communicating with said liquid supply means, said heating element being adapted to supply sufficient heat to vaporize a gaseous mixture from said liquid zone;

(d) a housing disposed about said heating element in spaced relationship thereto the space between said housing and

said heating element containing a medium for transferring heat from said heating element to said vaporized gas zone and to said liquid zone through the walls of said housing;

(e) at least one thermal sensing element disposed in the interior of said housing and arranged to monitor the temperature of said housing which is in contact with the vaporized gas zone;



(f) a control unit responsive to said thermal sensing element and operatively connected to said heating element for adjusting the temperature of the housing which is in contact with the vaporized gas zone; and

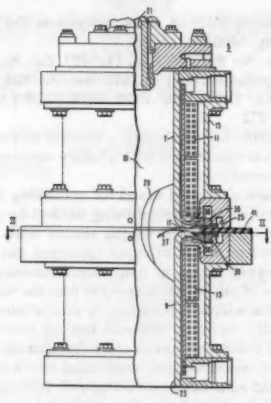
(g) means for removing the gaseous mixture from the vaporized gas zone of said vessel.

4,219,726

ARC HEATER CONSTRUCTION WITH TOTAL ALTERNATING CURRENT USAGE

Thomas N. Meyer, Murrysville, and Charles B. Wolf, Irwin, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 29, 1979, Ser. No. 24,940
Int. Cl.[2] H05B 7/18
U.S. Cl. 219—383 **6 Claims**



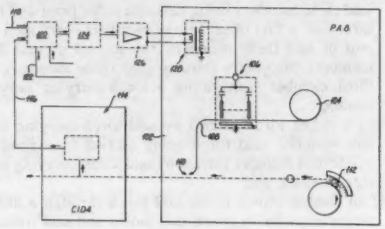
1. Arc heater apparatus comprising means defining an arc chamber and including a pair of axially spaced cylindrical electrodes forming a narrow gap therebetween and connected to a first AC power source to produce an arc in the gap, means spacing and electrically insulating the electrodes from each other and comprising means for channeling gas to be heated at a high velocity to the gap, the arc chamber extending in opposite directions from the gap and having an inlet end and an outlet end, each of the electrodes having magnetic coil means for producing a magnetic field at the arcing surface of the electrodes to rotate the arc, and the magnetic coil means also being connected to a second AC power source thereby producing a magnetic field zero being controlled relative to that of the first AC power source.

4,219,727

APPARATUS FOR PERFORATING A MOVING WEB

Reginald C. Bolt, London, England, assignor to Molins Limited, England

Filed Aug. 4, 1978, Ser. No. 931,122
Claims priority, application United Kingdom, Aug. 5, 1977, 32969/77; Oct. 15, 1977, 42950/77
Int. Cl.[2] H05B 7/18
U.S. Cl. 219—384 **6 Claims**



1. Apparatus for perforating a moving web of tipping paper in a filter cigarette making system including means for making filter cigarettes using said tipping paper, comprising a series of separate electrodes on one side of the path of the web; cooperating electrode means on the other side of the web; a variable frequency high voltage A.C. power supply; a respective capacitor connecting each of the said series of electrodes to the output of the high voltage power supply, whereby the paper is perforated by electric sparks jumping between the separate electrodes and said cooperating electrode means; detection means for detecting the resistance to air flow through the perforations of at least some of the completed filter cigarettes; and control means responsive to said detection means for regulating the frequency of the high voltage power supply so as to vary the effective impedance of the capacitors and thus the current through the separate electrodes in order to achieve the desired air dilution in the filter cigarettes.

4,219,728

HEATER MODULE FOR AN APPARATUS FOR MELTING AND DISPENSING THERMOPLASTIC MATERIAL

Donald R. Mercer, 110 Taylor Industrial Dr., Hendersonville, Tenn. 37075

Filed Sep. 27, 1978, Ser. No. 946,412
Int. Cl.[2] F27B 14/00
U.S. Cl. 219—421 **6 Claims**

1. A heater module assembly adapted to be used in an apparatus for melting and dispensing thermoplastic material, comprising:

(a) at least first and second heater modules,

(b) each of said heater modules comprising an elongated body of thermally conductive material including an elongated core having longitudinal, transverse, and vertical dimensions, and first and second sides,

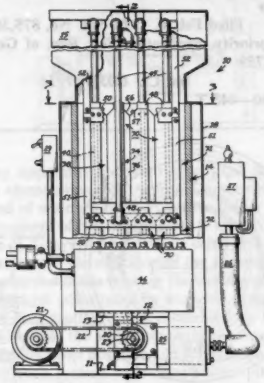
(c) each of said bodies including longitudinally spaced, vertically disposed, first fins projecting laterally from the first

side of each of said corresponding cores, each first fin having exposed heat transfer surfaces and defining a substantially vertical first recess between each pair of adjacent first fins,

(d) each of said bodies further including longitudinally spaced, vertically disposed, second fins projecting laterally from the second side of each of said cores, each second fin having exposed heat transfer surfaces and defining a substantially vertical second recess between each pair of adjacent second fins,

(e) said first and second heater modules being arranged so that said corresponding elongated bodies are substantially parallel and adjacent to each other,

(f) each first fin of said first body spanning a second recess of



said second body, and each second fin of said second body spanning a first recess of said first body, so that each of said first recesses on said first body and each of said second recesses on said second body are closed by opposing corresponding fins to form longitudinally staggered substantially vertical holes through which thermoplastic material is adapted to flow,

(g) each of said first fins on said first body having substantially the same longitudinal dimension as a corresponding second recess on said second body and each of said second fins on said second body having substantially the same longitudinal dimension as a corresponding first recess on said first body, and

(h) heating means within said bodies for heating the exposed heat transfer surfaces of said first and second fins.

4,219,729

METHOD OF ALIGNING AND LOCATING THE MIRRORS OF A COLLECTOR FIELD WITH RESPECT TO A RECEPTOR TOWER

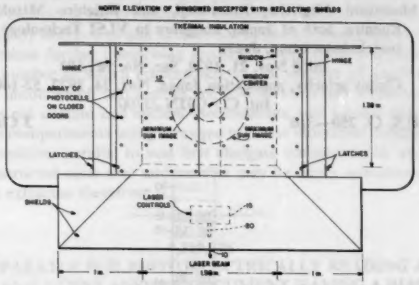
Otto J. M. Smith, 612 Euclid Ave., Berkeley, Calif. 94708

Filed Jun. 16, 1978, Ser. No. 916,134
Int. Cl.[2] G01J *1/20*
U.S. Cl. 250—203 R **20 Claims**

1. Apparatus for aiming the solar collector mirrors of a solar power plant at a receptor on a tower comprising: a photocell array substantially coextensive with the window of said receptor;

a laser beam source in proximity to said window aimed at a mirror;

means for sensing the mirror image of said laser beam on said photocell array and means for moving said laser beam to the center of said mirror such means being responsive to



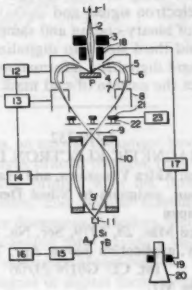
said photocell array sensing the deviation of intensities of said laser beam to center such beam.

4,219,730

CHARGE-PARTICLE ENERGY ANALYZER

Isao Ishikawa, Hino; Yoshitaka Goto, Sayama, and Michiyasu Itoh, Iruma, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 25, 1978, Ser. No. 936,928
Claims priority, application Japan, Aug. 29, 1977, 52-102706
Int. Cl.[2] H01J *39/00*; **G01M** *23/00*
U.S. Cl. 250—305 **4 Claims**

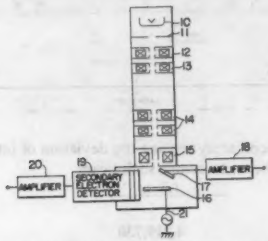


1. A charged-particle energy analyzer comprising means for irradiating a sample with a primary charged particle beam, said sample being mounted in a perpendicular direction to a center axis of said primary charged particle beam, deflecting electrode means for focusing a a charged particle flux emitted from the sample onto the center axis of said primary charged particle beam or onto an identical circumference with its center on the axis, slit means disposed at a focus position of the charged particle flux, energy analysis means with its object point lying at the focus position and arranged for analyzing energy of the charged particles, detection means for detecting said charged particles analyzed by said energy analysis means, and charged particle flux deflecting disposed in the peripheral vicinity of a path of said charged particle flux between said sample and said detection means, said charged particle flux deflecting means enabling interception of part of the charged particle flux entering thereinto in an angular range of all directions within a plane perpendicular to the axis, said charged particle flux deflecting means comprising a plurality of shield plates which are arranged axially symmetrically in the vicinity of a path of said charged particle flux between said sample and said detection means, said each shield plate being movable to a position at which it intercepts part of said charged particle flux.

4,219,731
METHOD FOR DETECTING OBJECT PICTURE BY ELECTRON BEAM

Masatoshi Migitaka, Kokubunji, and Koichiro Mizukami, Kodaira, both of Japan, assignors to VLSI Technology Research Association, Japan

Filed Nov. 21, 1978, Ser. No. 962,683
Claims priority, application Japan, Nov. 24, 1977, 52-140048
Int. Cl.² G01N *23/00*
U.S. Cl. 250—310 **3 Claims**

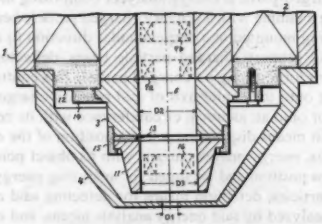


1. A method for detecting a mask pattern by an electron beam, comprising:
- a first step of irradiating with an electron beam a mask having a pattern formed on a surface thereof;
- a second step of separately detecting a signal relating to reflected electrons from said mask and a signal relating to secondary electrons from said mask;
- a third step of adding the reflected-electron signal and the secondary-electron signal; and
- a fourth step of binary-coding and sampling a signal resulting from said third step into digitalized information and subjecting said digitalized information to picture processing to detect the pattern of said mask.

4,219,732
MAGNETIC ELECTRON LENS

Seiichi Nakagawa; Akira Yonezawa, and Masatsugu Kikuchi, all of Tokyo, Japan, assignors to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 28, 1979, Ser. No. 24,692
Claims priority, application Japan, Apr. 7, 1978, 53-41082
Int. Cl.² G01N *23/00*
U.S. Cl. 250—396 ML **5 Claims**

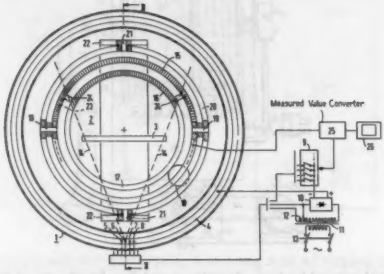


1. A magnetic electron objective lens for use in a scanning electron device, said lens being equipped with upper and lower magnetic pole pieces each having holes through which the electron beam passes, the hole diameter D_2 of the upper magnetic pole piece being larger than the hole diameter D_1 of the lower pole piece, said lens also being characterized in that at least one ring-shaped supplemental magnetic pole piece is installed between the upper and lower magnetic pole pieces so that the total width G_1 of the gaps between pole pieces in the lower half of the space between the upper and lower magnetic pole pieces is more than 1/1.5 times larger than the total width G_2 of the gaps between pole pieces in the upper half of the space between the upper and lower pole pieces, wherein the spherical abberration coefficient of the lens is reduced.

4,219,733
X-RAY DIAGNOSTIC APPARATUS PRODUCING TRANSVERSE LAYER IMAGES

Edgar Tschunt, Rathsberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 6, 1978, Ser. No. 875,385
Claims priority, application Fed. Rep. of Germany, Apr. 1, 1977, 2714759
Int. Cl.² G03B *41/16*
U.S. Cl. 250—445 T **3 Claims**



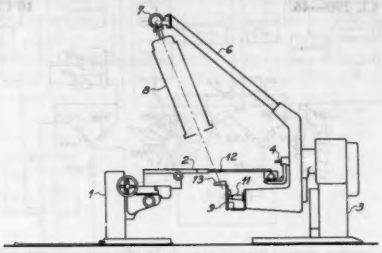
1. An x-ray diagnostic apparatus for producing transverse layer images of a radiography subject with an x-ray measuring arrangement comprising an x-ray source which produces a fan-shaped x-ray beam penetrating the ratiography subject, the cross-sectional extent of the beam, perpendicular to the layer plane, being equal to the layer thickness and, in the layer plane, being of such a magnitude that the entire layer is penetrated with radiation, and comprising also a radiation receiver which detects the radiation intensity emanating from the layer, said radiation receiver being constructed as a circular ring into which the radiography subject may be inserted and comprising a series of detectors, and with means for changing the direction of the axis of symmetry of the x-ray beam to effect a scanning operation and with a measured value converter for the transformation of the signals supplied by the radiation receiver into a layer image, characterized in that the x-ray source (1) comprises an evacuated tube means disposed outwardly of the radiation receiver (15), anode means (4) in the tube means, and a number of cathodes (5 etc.) opposite successive portions of the anode means (4) for producing a desired number of measured values, in that there are means (9) present for the progressive actuation of electron radiation between at least one of said cathodes (5 etc.), respectively, and the anode means (4) to effect a scanning operation, in that the radiation receiver (15) has gimbal mounting means, and guide means (24) acting on said radiation receiver (15) for swiveling that particular part of the circular ring forming the radiation receiver (15), which is required to detect the x-radiation issuing from the radiography subject, into the x-ray beam (14), such that successive parts of the circular ring forming the radiation receiver are successively interposed between the radiography subject and portions of the x-ray source outwardly thereof during a scanning operation.

4,219,734

X-RAY APPARATUS FOR TRANSVERSE AXIAL TOMOGRAPHY

Marc Chery, Paris, France, assignor to Compagnie Generale de Radiologie, Paris, France

Filed Jul. 26, 1978, Ser. No. 928,217
Claims priority, application France, Jul. 29, 1977, 77 23445
Int. Cl.[2] A61B 6/00, 6/02; H05G 1/02
U.S. Cl. 250—445 T 6 Claims



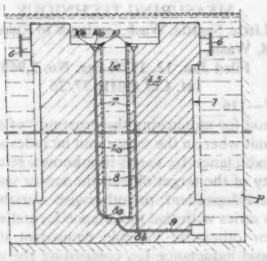
1. An X-ray apparatus for transverse axial tomography, comprising an examination table, a frame supporting a pivotal lever at one end of which is fixed a cassette holder to which is imparted a movement of rotation relative to the pivoting of the lever, a source of X-rays mounted at the other end of the lever and emitting a beam in the direction of the cassette, a window for limiting the format of the beam in the vicinity of the source, a variable diaphragm constituted by movable opaque shutters the position of said shutters being controlled by first driving means so as to control the spread angle of the beam in dependence of the pivotal lever position, and further comprising two movable filters each formed by a filter holder provided with filtering plates and controlled by second driving means coupled to said first driving means in such manner that the relative displacements of the filter holders and the opaque shutters with respect to the beam are homothetic relative to the focal spot of the X-ray source.

4,219,735

CONTAINER FOR THE TRANSPORTATION OF IRRADIATED FUEL ELEMENTS AND HANDLING DEVICE ADAPTED THEREFOR

Paul Blum, Saint-Nom-la-Breteche, France, assignor to Transnucleaire, Societe pour les Transports de l'Industrie Nucleaire, Paris, France

Filed Dec. 23, 1976, Ser. No. 753,904
Claims priority, application France, Dec. 31, 1975, 75 40347
Int. Cl.[2] G21F 5/00
U.S. Cl. 250—507 4 Claims



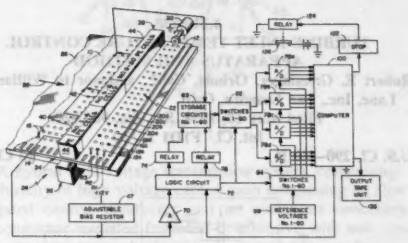
1. A container for the transportation of irradiated nuclear fuel elements whose criticality can be controlled by means of internally disposed neutron poison needles, wherein said container comprises first elongate compartments for housing said nuclear fuel elements therein during transportation and wherein said container is further provided with a number of neutron poison needles having gripping heads which are necessary to control the criticality of transported nuclear fuel elements by insertion of said needles inside said fuel elements, said container further comprising second elongate compartments, the number of which corresponds to said number of needles and inside which said needles are housed when said container does not contain said nuclear fuel elements, said second elongate compartments being arranged to house individual needles in positions parallel to said first elongate compartments, and constructed such that said needles may be easily introduced and extracted therefrom.

4,219,736

APPARATUS FOR PHOTOELECTRICALLY READING A TRANSLUCENT ANSWER DOCUMENT HAVING A BIAS BAR PRINTED THEREON

James Thibodeau, Minneapolis, Minn., assignor to National Computer Systems, Inc., Minneapolis, Minn.

Filed Nov. 14, 1975, Ser. No. 631,828
Int. Cl.[2] G01V 5/00
U.S. Cl. 250—557 19 Claims



1. In combination, an answer document having a bias bar and various response areas printed thereon, both said bias bar and response areas being printed with ink possessing the same optical characteristics, and optical scanning apparatus for scoring said answer document including first means for deriving a first signal in analog form having a value representative of the optical characteristics of said bias bar, second means for storing a second signal in digital form having a value corresponding to the value of said first signal for subsequent comparison with additional signals derived from said response areas, and means for converting said analog signal to said digital signal, said digital signal having a value which is the substantial digital equivalent of the amplitude of said analog signal, said amplitude being said value representative of the optical characteristics of said bias bar.

4,219,737

SELF REGULATING MICROFILM FRAME DETECTION CIRCUIT

Richard T. Gagnon, Rochester, and Stephen C. Horste, Ann Arbor, both of Mich., assignors to Visual Systems Corporation, Southfield, Mich.

Filed Dec. 18, 1978, Ser. No. 970,228
Int. Cl.[2] G06K 7/14
U.S. Cl. 250—570 13 Claims

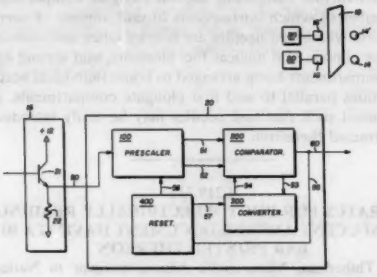
13. A method of self establishing a variable threshold for detecting a marker on a microfilm frame wherein the microfilm moves through a light detecting system and wherein each frame has a marker comprising the steps of:

measuring the deviations in light caused by the passing of a marker through said detection system;

comparing said deviation in light with a threshold, said

threshold being a function of the deviation in light produced by the immediately preceding marker;

providing an output signal when said deviation in light exceeds said threshold; and



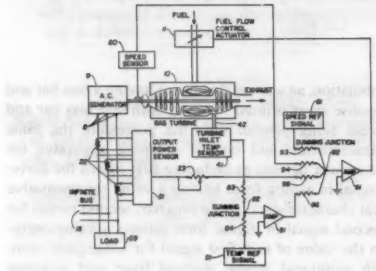
establishing a new threshold based on a fraction of the deviation of the marker which caused the output signal to be provided.

4,219,738

TURBINE INLET TEMPERATURE CONTROL APPARATUS AND METHOD

Robert E. Griesinger, Orinda, Calif., assignor to Williams & Lane, Inc., San Leandro, Calif.

Filed May 15, 1978, Ser. No. 906,020
Int. Cl.[2] F1D1 *15/10*
U.S. Cl. 290—40 R **13 Claims**



1. In a gas-driven turbine and AC generator driven thereby and having the generator output connected to a fixed frequency infinite AC bus for supplying power to an electrical load, apparatus for setting, controlling, and maintaining a constant turbine inlet temperature comprising:

means sensing generator rotational speed and providing and electric signal proportional thereto;

means providing a first reference electric signal;

means sensing output power of said generator and providing an electric signal proportional thereto;

means sensing turbine inlet temperature and providing an electric signal proportional thereto;

means providing a second reference electric signal;

electrically actuated means for controlling fuel flow to the turbine;

means connected to and summing said turbine inlet temperature signal and said second reference signal and providing a first output signal;

means connected to and summing said rotational speed signal and said first reference signal and said output power-sensing signal and said first output signal to provide a second output signal; and

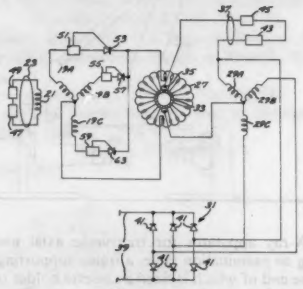
means connecting said second output signal to said fuel flow control means.

4,219,739

STARTER MOTOR-ALTERNATOR APPARATUS

Jack E. Greenwell, Reno, Nev., assignor to Lear Avia Corporation, Reno, Nev.

Filed Apr. 27, 1978, Ser. No. 900,421
Int. Cl.[2] F02N *11/04*
U.S. Cl. 290—46 **10 Claims**



1. An electric machine having a rotor and stator portion and adapted to be driven by DC to produce torque for starting an engine, and when driven by such engine, to produce an AC electric output, said machine comprising:

a main rotor winding;

a main stator winding;

a heavy current commutation system including a commutator and brushes connecting said main rotor winding and said main stator winding in series for the production of torque to start said engine;

an exciter armature winding located on said rotor portion for joint rotation with said main rotor winding;

an exciter field winding on said stator portion coacting with said exciter armature winding;

a controlled rectifier set connected between the exciter-armature winding and the main rotor winding for feeding DC from AC generated by said exciter-armature winding to said main rotor winding; and

an automatically activated gate switching means connected between said controlled rectifier set and said main rotor winding, said switch means being open when said machine is driven by DC to produce torque and closed when driven by said engine to produce an AC electric output.

4,219,740

PROXIMITY SENSING SYSTEM AND INDUCTANCE MEASURING TECHNIQUE

William R. Little, Seattle, Wash., assignor to Eldec Corporation, Lynnwood, Wash.

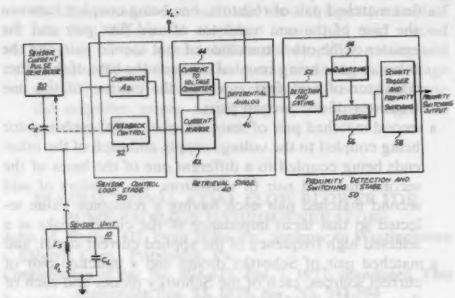
Filed Jan. 12, 1979, Ser. No. 2,968
Int. Cl.[2] G01R *27/26*
U.S. Cl. 307—116 **46 Claims**

8. A method for monitoring the proximity of a target object to a sensor unit wherein the sensor unit includes a sensor inductor whose inductance L_S varies in a known relationship with the proximity of the target object, the sensor unit also having a temperature-dependent or otherwise variable equivalent resistance in series with said inductance L_S and a temperature-dependent or otherwise variable equivalent capacitance in shunt with said inductance L_S, comprising the steps of:

periodically establishing, during each of successive system periods T_S, a current i_S through the sensor unit, and thereby through the sensor inductor, said sensor current having a time-variable waveform; and, for each such system period T_S,

thereafter constraining the voltage v_S across the sensor unit to be constant when said sensor voltage reaches a reference voltage V_L, whereby the effect of the equivalent capacitance is cancelled;

while so constraining said sensor voltage to be constant,



determining the rate of change of said sensor current with respect to time when said sensor current is zero, whereby the effect of the equivalent resistance is cancelled;

establishing an indication of the inductance L_S when said sensor current is zero in accordance with the relationship

$$L_S \alpha \frac{1}{di_S/dt} \Bigg|_{\substack{v_S = V_L \\ i_S = 0}}$$

and,

providing a target proximity indication representative of the proximity of the target object to the sensor unit in accordance with a known relationship between the proximity of the target object and the inductance L_S.

4,219,741

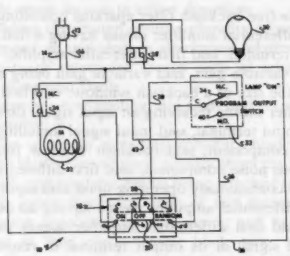
RANDOM TIMER APPARATUS

Lee L. Von Gunten, 1515 E. Crabtree, Arlington Heights, Ill. 60004

Filed Aug. 18, 1978, Ser. No. 934,947

Int. Cl.[2] H01H *43/18, 43/30*

U.S. Cl. 307—141 **6 Claims**



1. A timer device comprising a drive motor, an output means, a control switch connectable to a power source, and a power circuit connecting said control switch, drive motor, and said output means, and characterized by

two dissimilar timing elements,

said power circuit including a multi-contact switch having a member movable from a normally closed terminal first position to a normally open terminal second position to close the same, power being supplied to said output means by said switch first position,

a control member operably connected to said multicontact switch to move same from its normally closed position to its actuated second position closing its normally open terminal,

connector and control means engageable individually with said timing elements to move said control member to its actuated second position to interrupt power flow to said output means on an irregular basis, and said power circuit being connected so as to maintain power supply to said drive motor at elected times, and a normally closed thermostat is connected in series with said drive motor and is operably associated with said drive motor to open its power circuit at predetermined temperatures.

4,219,742

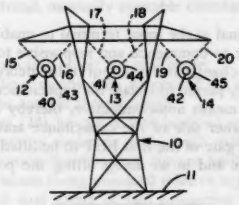
HYBRID DUAL VOLTAGE TRANSMISSION SYSTEM

Jonathan Z. Ponder, Lansdale, Pa., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Dec. 20, 1978, Ser. No. 971,221

Int. Cl.[2] H02G *7/20*

U.S. Cl. 307—147 **4 Claims**



1. A hybrid dual voltage transmission system, comprising:

a plurality of high voltage cables, each comprising an elongated central conductor and an outermost concentric conductor insulated from and coextensive with said central conductor, each of said outermost conductors being at first potentials which are substantially above ground potential, each of said central conductors being at second potentials which are greater than said first potentials; and

support means including a suspension tower which is mechanically connected to said outermost concentric conductors and spaces said outermost concentric conductors from one another by a distance sufficient to prevent breakdown between said outer concentric conductors, said distance being insufficient to insulate said central conductors from one another in the absence of said outermost concentric conductors, said suspension tower occupying a space and having a height needed to support a transmission system at said first potential while transmitting voltages at said second potential.

4,219,743

BUFFER CIRCUIT

John K. Millns, Mottisfont, and Clive Weeks, Southampton, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 12, 1978, Ser. No. 941,675

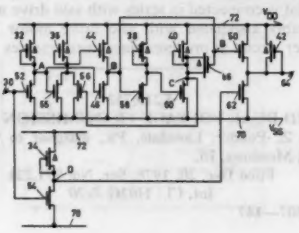
Claims priority, application United Kingdom, Sep. 26, 1977, 39946/77

Int. Cl.[2] H03K *17/04, 17/12, 17/28, 17/60*

U.S. Cl. 307—270 **14 Claims**

1. A buffer circuit comprising an input terminal, an output terminal, first and second field effect transistors (FETs) having their source-drain paths connected in series between a pair of power supply rails, the junction of said source-drain paths being connected to the output, first and second circuits connected between the output terminal and the gates of the first and second FETs, respectively, said first and second circuits being operative in response to changes in a signal applied to the input terminal to render only one of the first and second FETs

conductive at any one time, said first circuit including a bootstaping capacitance having one side connected to the gate of the first FET and another side coupled to an output of a delay circuit, the delay period of which circuit determines the charging time of the capacitance, an input of the delay circuit being coupled to the input terminal, switching means for connecting the one side of the capacitance to a current charging source and switch control means responsive to a predetermined



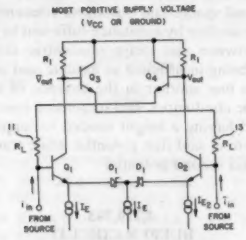
change in a signal at the input terminal to enable charging of the capacitance to commence and responsive to a subsequent predetermined change at the output of the delay circuit at the end of said delay period to isolate the capacitance by rendering said switching means non-conductive, thereby lifting the potential at the other side of the capacitance and allowing the potential at the gate of the first FET to be lifted above that of the supply rails and in so doing lifting the potential at the output terminal.

4,219,744

DC-COUPLED SCHMITT TRIGGER CIRCUIT WITH INPUT IMPEDANCE PEAKING FOR INCREASING SWITCHING SPEED

Charles E. Shinn, II, Los Altos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 3, 1978, Ser. No. 875,041
Int. Cl.[2] H03K *3/286*
U.S. Cl. 307—290 **1 Claim**



1. Schmitt trigger circuit responsive to differential input current signals, to a supply voltage from a voltage source and to a constant DC current from a DC current source, the circuit comprising:

a first matched differential pair of transistor means disposed for performing a switching function, each transistor having a base, an emitter, and a collector, the emitters being coupled to each other and to the DC current source, and the bases being disposed for receiving the differential input current signals;

a second matched pair of transistor means disposed for performing a feedback function and for always being in a conducting state in response to the input current signals regardless of the conducting state of the transistors of the first matched pair, each transistor having a base, an emitter, and a collector, the collectors of said second pair being coupled to each other and to the voltage supply, the base of one transistor of said second pair being coupled to the collector of one transistor of said first pair such that positive feedback occurs, and the base of the other transistor of said second pair being coupled to the collector of the other transistor of said first pair;

a first matched pair of resistors, one being coupled between the base of the one transistor of said first pair and the emitter of the other transistor of said second pair, and the other resistor being coupled between the base of the other transistor of said first pair and the emitter of the one transistor of said second pair;

a second matched pair of resistors, one end of each resistor being coupled to the voltage supply and each of the other ends being coupled to a different one of the bases of the second matched pair of transistors, the resistors of said second matched pair each having a resistance value selected so that input impedance of the circuit peaks at a selected high frequency of the applied current signal; and

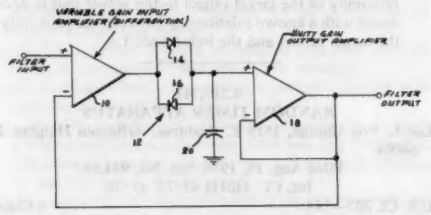
a matched pair of Schottky diodes and a matched pair of current sources, each of the Schottky diodes and each of the pair of current souces being coupled to an emitter of the first matched pair of transistors, the Schotty diodes being further coupled to each other and to the DC current source.

4,219,745

BACKLASH FILTER APPARATUS

Michael S. Hersman, Santa Monica, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 15, 1978, Ser. No. 915,709
Int. Cl.[2] H03K *5/20, 5/08*
U.S. Cl. 307—358 **6 Claims**



1. A gate-free backlash filter aparatus consisting solely of:

a first differential amplifier means having a first and second input terminal, said first differential amplifier means having a variable gain, said variable gain being set to determine the size of a backlash window, said first differential amplifier means receiving an input signal directly at said first input terminal, said input signal including a spurious noise component, said backlash window removing said spurious noise component, said first differential amplifier means continuously operating upon said input signal, said first differential amplifier means having an output terminal, said first differential amplifier means providing an output signal at its output terminal in response to said input signal,

a voltage drop means connected to said output terminal of said first differential amplifier means to receive the output signal therefrom, said voltage drop means lowering the voltage of said output signal from said first differential amplifier means by a predetermined amount to provide a voltage signal, said voltage drop means having an output terminal, and;

a second differential amplifier means having a first and second terminal, said second differential amplifier means having a predetermined gain, said second differential amplifier means having an input capacitor connected from

said first terminal to ground, said first terminal being connected to said output terminal of said voltage drop means, said input capacitor holding said voltage signal from said voltage drop means, said second differential amplifier means having an output terminal, said output terminal of said second differential amplifier means being directly connected to both said second input terminal of said first differential amplifier means and said second terminal of said second differential amplifier means, said second differential amplifier means receiving said voltage signal from said voltage drop means, said second differential amplifier means amplifying said voltage signal to provide a filter output signal.

4,219,746

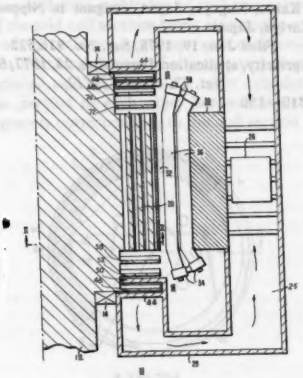
BI-DIRECTIONAL AXIAL FLOW BLOWER FOR PUMP-STORAGE HYDROGENERATORS

John M. Butler, III, Penn Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 804,427, Jun. 7, 1977, abandoned. This application Sep. 13, 1978, Ser. No. 941,994

Int. Cl.² H02K *1/32*

U.S. Cl. 310—61 **7 Claims**



1. A synchronous dynamoelectric machine comprising:

a shaft having a first and a second end, said shaft being rotatable about its axis in either direction;

a field winding distributed about a plurality of poles which are disposed on said shaft in alternating relationship with a plurality of interpolar spaces each of which extend axially along said shaft;

a casing member surrounding said shaft and providing support therefor;

a first series of blades including stationary blade rows and rotatable blade rows situated radially about the first end of said shaft, said rotatable blades being attached to said shaft so as to rotate therewith, each of said stationary blade rows being supported by said casing and being axially adjacent at least one rotatable blade row, said blades axially forcing an elastic coolant through said interpolar spaces to the second end of said shaft when said shaft is rotated in a first direction; and

a second series of blades including stationary blade rows and rotatable blade rows situated radially about the second end of said shaft, said rotatable blades being attached to said shaft so as to rotate therewith, each of said stationary blade rows being supported by said casing and being axially adjacent at least one rotatable blade row, and blades axially forcing an elastic coolant through said interpolar spaces to said shaft's first end when said shaft is rotated in a second direction.

4,219,747

MECHANICAL APPARATUS FOR ACTIVATING NO LOAD CURRENT LIMITING CIRCUITS IN ELECTRIC MOTORS

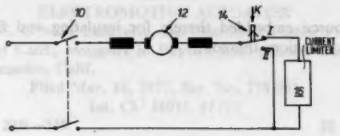
Friedrich Hornung, Stuttgart, and Fritz Schadlich, Leinfelden-Echterdingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 16, 1978, Ser. No. 961,106

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1977, 2755401

Int. Cl.² H02K *11/00*

U.S. Cl. 310—68 B **3 Claims**



1. In an electrical, manually operable circular saw having a motor (12);

a blade;

a tiltable protective cover for said blade;

current limiting means (16) connected to said motor for limiting the current therethrough;

switch means (14) having a first position connecting said current limiting means in series with said motor and a second position shunting said current limiting means;

said switch means being mounted relative to said portective cover such that tilting of said protective by a predetermined angle switches said switch means to said second position, said predetermined angle defining a position of said cover immediately preceding application of the blade to a workpiece and hence immediately preceding application of a load on said motor,

said protective cover forming a sensing element sensing when the saw is in a predetermined relation to the workpiece,

whereby the motor will be started with said current limiting means connected by said switch means in said first position, and will be switched over to full power immediately preceding application of the load on the motor.

4,219,748

ELECTRICAL MACHINE STATOR AND MANUFACTURING METHOD THEREFOR

Yukinobu Sakaguchi, Osaka; Tomiaki Sakano, Hirakata, and Junichi Hirata, Mino, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 658,663, Feb. 17, 1976, abandoned. This application Mar. 13, 1978, Ser. No. 886,038

Claims priority, application Japan, Feb. 19, 1975, 50-21187; Feb. 19, 1975, 50-21188; Feb. 19, 1975, 50-21189; Feb. 19, 1975, 50-21190; Feb. 19, 1975, 50-21191; Mar. 19, 1975, 50-34053; May 20, 1975, 50-60785

Int. Cl.² H02K *11/00*

U.S. Cl. 310—71 **1 Claim**

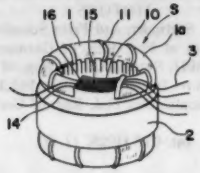
1. A stator assembly for use in an electrical machine which comprises:

a core member;

a coil element inserted in said core member having at least one of the coil ends of said coil element extending outwardly from a corresponding end of said core member, said one of said coil ends having coil winding ends extending out of it and connected to lead wires for an external power source; and

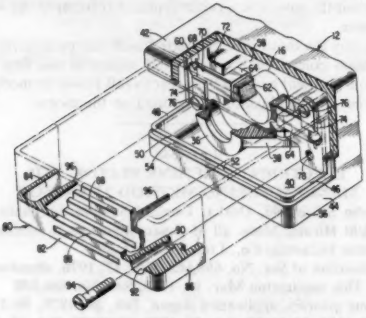
a terminal structure constituted by a moldable resin mounted directly on said one of said coil ends to straddle said one of said coil ends having a plurality of band members integrally formed therewith for surrounding said one of said

coil ends and having the connections between said coil winding ends and the lead wires for an external power



source embedded therein for insulating and fixing the connections thereon.

4,219,749
HOUSING FOR POWER TOOLS
Harvey C. Rettberg, Pickens, S.C., assignor to The Singer Company, Stamford, Conn.
Filed Jul. 10, 1978, Ser. No. 923,414
Int. Cl.³ H02K *5/00*
U.S. Cl. 310—89 **7 Claims**



1. A housing for a power tool having a universal motor journaled in the housing, the motor having an armature and commutator affixed to an armature shaft, a pair of brushes operatively associated with the commutator, the housing comprising;

a. walls defining an access aperture adjacent the brushes and commutator,

b. a brush mounting means including a pair of members to hold each of the brushes and a pair of screws threadedly connected to the housing to clamp the members,

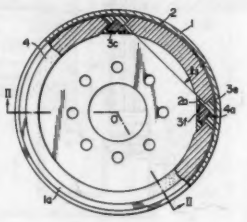
c. a cover connected to the housing to enclose the aperture, and

d. a post extending inwardly from the cover in superposition to each of said screws to prevent each of said screws from backing out of its threaded connection once the cover is connected to the housing.

4,219,750
Patent Not Issued For This Number

4,219,751
Patent Not Issued For This Number

4,219,752
ROTOR FOR A MAGNETO GENERATOR
Aritsune Katou, Nagoya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan
Filed Jun. 19, 1978, Ser. No. 916,522
Claims priority, application Japan, Jun. 24, 1977, 52-83841[U]
Int. Cl.² H02K *21/12*
U.S. Cl. 310—156 **5 Claims**



1. A rotor for a magnet generator comprising:

a cup-shaped magnetic member,

a plurality of arcuate permanent magnet members each having abutting surfaces at both its ends,

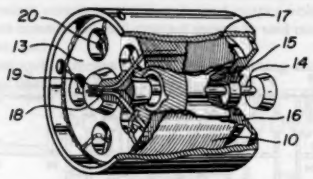
a ring-shaped nonmagnetic case disposed in said cup-shaped magnetic member, said case having a plurality of resilient dovetailed columnar members for securing said magnet members in said case between adjacent columnar members positioned at the abutting surfaces of said magnet, at least one of said columnar members having therein a wedge mounting slot, and

a ring-shaped nonmagnetic wedge member supporting at least one wedge which is inserted into said wedge mounting slot to expand said mounting slot thereby pressing the corresponding dovetailed columnar member against the abutting surfaces located adjacent said member.

4,219,753
WINDING ARRANGEMENT FOR A DIRECT CURRENT ELECTRIC MACHINE
Marc Heyraud, rue Charles l'Eplattenier 2, 2206 Les Geneveys-sur-Coffrane, Switzerland
Filed Mar. 27, 1978, Ser. No. 890,804
Claims priority, application Switzerland, Mar. 28, 1977, 3876/77
Int. Cl.² H02K *1/00*
U.S. Cl. 310—198 **1 Claim**

1. A direct-current electric machine comprising a cylindrical

ironless rotor coil, a stationary magnetic circuit including an air gap, the rotor coil being adapted for rotation in the said air gap and comprising at least one layer of wires which are placed side by side in an oblique direction with respect to the generatrices of the rotor cylinder, the said coil being constituted by a



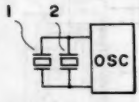
plurality of coil sections, the machine further comprising commutator means including a plurality of collector segments, the wire ends of the said coil sections being electrically connected to corresponding collector segments and each coil section comprising at least two groups of adjacent wire turns which groups are placed side by side on the rotor cylinder and are connected in parallel to each other between the respective collector segments corresponding to the coil section.

4,219,754

TEMPERATURE COMPENSATION BY POSITIONING OF PLURAL PIEZOELECTRIC VIBRATORS IN AN ELECTRONIC WRISTWATCH

Hideo Hoshi, and Shiro Mitsugi, both of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Aug. 11, 1978, Ser. No. 932,958
Claims priority, application Japan, Aug. 23, 1977, 52/100796
Int. Cl.[2] G04C *3/00*; H03B *5/32*; H01L *41/04*
U.S. Cl. 310—315 **9 Claims**



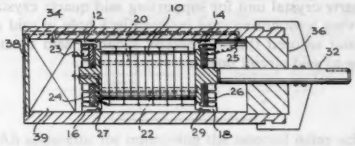
1. In an electronic wristwatch having a watch body and a plurality of piezoelectric vibrators having frequency-position characteristics for improving the frequency-temperature characteristic of the standard signal generated thereby, the improvement comprising positioning the vibrators in the watch body so that at least one vibrator has a different frequency-position characteristic than the other vibrators to compensate for any frequency deviation thereof due to the orientation of the watch body.

4,219,755

ELECTROMOTIVE ACTUATOR

Cormac G. O'Neill, Lafayette, and Charles E. Foster, Fremont, both of Calif., assignors to Physics International Company, San Leandro, Calif.

Filed Mar. 18, 1977, Ser. No. 778,861
Int. Cl.[2] H01L *41/10*
U.S. Cl. 310—348 **21 Claims**



1. An electromotive actuator comprising
a hollow housing having internal walls,
electromotive means within said container comprising electroexpansive body means for increasing its axial dimension in response to an electric field applied thereacross,
releasable holding means attached to each end of said electroexpansive body means for holding it within said housing so that its axial expansion results in a displacement relative to said housing,
each of said releasable holding means including electroexpansive disc means for contracting radially when excited, and
means defining an expandable cup in which said electroexpansive disc means is positioned and adapted to engage the inner peripheral surface thereof, with the exterior peripheral surface of said cup adapted to engage said internal walls when said electroexpansive disc means is not excited and to not engage said internal walls when said electroexpansive disc means is excited, and
means for sequentially exciting and removing excitation from one of said electroexpansive disc means, said electroexpansive body means and then the other of said electroexpansive disc means to cause relative motion of said electromotive means and said hollow housing.

4,219,756

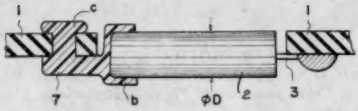
MOUNTING STRUCTURE OF A QUARTZ CRYSTAL UNIT

Isamu Nishida; Tadashi Otani, and Kenji Yajima, all of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed May 19, 1978, Ser. No. 907,574
Claims priority, application Japan, Jun. 7, 1977, 52-73768[U]
Int. Cl.[2] H01L *41/10*
U.S. Cl. 310—348 **3 Claims**

1. A mounting structure of a quartz crystal unit mounted on

a circuit board for use in electronic timepieces and the like comprising: a circuit board having an opening therein; an elongate quartz crystal unit having a set of terminals projecting from one end thereof and disposed within said opening and positioned such that the major axis of said quartz crystal unit lies parallel with the major plane of said circuit board; a solder connection connecting said terminals to said circuit board thereby rigidly fixing one end of said quartz crystal unit to said



circuit board; and a connecting member connecting the other end of said quartz crystal unit to said circuit board, said connecting member having a cup-shaped portion disposed within the circuit board opening and clamped over said other end of said quartz crystal unit for supporting said quartz crystal unit and having a mounting stud inserted in a hole in said circuit board and secured thereto thereby securing said connecting member to said circuit board.

4,219,757

GAS DISCHARGE LAMP

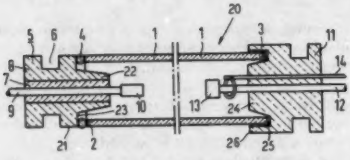
Werner Rech, Taunusstein; Wolfgang Welsch, Wiesbaden, and Josef Zimlich, Taunusstein, all of Fed. Rep. of Germany, assignors to Heimann GmbH, Wiesbaden, Fed. Rep. of Germany

Filed Mar. 22, 1978, Ser. No. 888,841

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1977, 2713702

Int. Cl.² H01J *6/36*

U.S. Cl. 313—220 **15 Claims**



1. A glass discharge lamp particularly useful as a flash tube comprising a glass tube having end surfaces and containing at least two electrodes and inert gas; a preformed glass body of sintered glass particles for each end of the glass tube, each preformed glass body having an annular shoulder with a conical end extended therefrom and having at least one electrical connector pin for an electrode extending therethrough in a sealed fashion, said preformed glass bodies being arranged with the conical and extending into the tube; and means for securing each preformed glass body to the glass tube including a glass solder seal extending between each end surface of the tube and the annular shoulder of the body disposed therein to form a gas tight seal so that the glass tube has an electrode disposed adjacent each end to act on an inert gas contained therein.

4,219,758

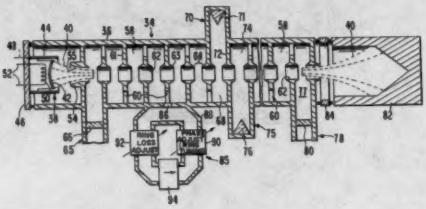
TRAVELING WAVE TUBE WITH NON-RECIPROCAL ATTENUATING ADJUNCT

Arthur Karp, Palo Alto, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Nov. 30, 1978, Ser. No. 965,452

Int. Cl.² H01J *25/34*

U.S. Cl. 315—3.6 **15 Claims**



1. In a traveling-wave tube, non-reciprocal attenuator means comprising:

a traveling-wave ring resonator capable of supporting a first and a second wave having opposite directions,

non-reciprocal loss means directively coupled to said traveling-wave ring resonator such that said first wave is attenuated more than said second wave,

a directional coupler coupling a wave traveling in one direction on the slow-wave interaction circuit of said tube preferentially to said first wave and coupling a wave traveling on said interaction circuit opposite to said one direction preferentially to said second wave.

4,219,759

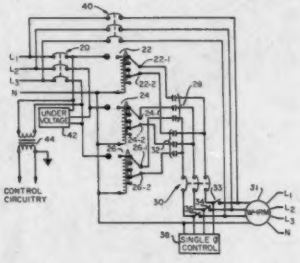
THREE PHASE POWER CONTROL UNIT

Richard L. Hirschfeld, 372 Bolinas Rd., Fairfax, Calif. 94930

Filed Sep. 25, 1978, Ser. No. 945,435

Int. Cl.² H03K *3/16*

U.S. Cl. 315—146 **21 Claims**



3. A three phase voltage control unit for applying voltage from three phase voltage input lines to three phase voltage output lines comprising,

first, second and third transformer means each having at least one input terminal and a plurality of output terminals,

means connecting said input voltage lines to input terminals of said transformer means,

contact means associated with said transformer means for selectively contacting output terminals of said transformer means,

first switch means for selecting said contact means to obtain a desired output voltage,

automatic switch means for automatically selecting said contact means to obtain a desired output voltage,

means connecting said contact means to said output voltage line, and

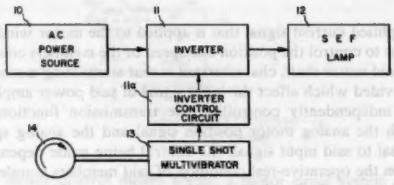
bypass switch means for directly connecting said input voltage lines to said output voltage lines.

4,219,760

SEF LAMP DIMMING

Armand P. Ferro, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 22, 1979, Ser. No. 22,938
Int. Cl.[2] H05B *41/392*
U.S. Cl. 315—248 **6 Claims**



1. A method of dimming an SEF lamp comprising:

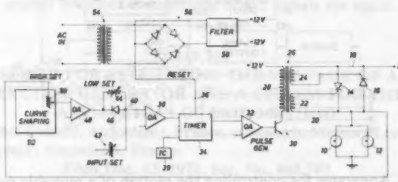
applying current pulses to said lamp at a first frequency, $1/T'$, and repeatedly interrupting said current pulses every $1/T_1$ seconds, said interruption lasting for a time, T_1-T_0 seconds where T' is less than T_1 and T_0 is no greater than T_1.

4,219,761

INCANDESCENT LAMP DIMMER PROVIDING CONTROL VOLTAGE IES SQUARE LAW COMPLIANCE CORRECTION

Edward H. Mustoe, Austin, Tex., assignor to Esquire, Inc., New York, N.Y.

Filed Oct. 31, 1978, Ser. No. 956,272
Int. Cl.[2] H05B *39/04*
U.S. Cl. 315—307 **8 Claims**



2. An incandescent lamp dimmer connectable to an incandescent lamp, comprising

at least one thyristor connected to supply current through the lamp from an ac source,

a pulse generator connected for gating said thyristor,

duty cycle means including a timer producing a rectangular wave pulse output, the pulse width determined by the dc level of the input voltage applied thereto, the trailing edge of said rectangular wave pulse operably connected to said pulse generator,

summing means connected to supply a dc voltage to said timer of said duty cycle means,

variable control voltage means connected to supply a first dc voltage to said summing means for setting a predetermined level of brightness for the incandescent lamp, and

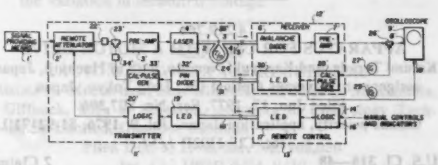
curve shaping means connected to sense at least a proportion of the voltage across the incandescent lamp and producing a second dc voltage to said summing means, said curve shaping means non-linearly correcting for the brightness of the lamp.

4,219,762

WIDEBAND SELF-CALIBRATED FIBER-OPTIC DATA LINK WITH FIBER-OPTIC STORAGE

Raine M. Gilbert, 15013 Olddale Rd., Centreville, Va. 22020

Filed Jan. 26, 1979, Ser. No. 6,829
Int. Cl.[2] H01J *29/70, 29/72*
U.S. Cl. 315—364 **8 Claims**



1. An apparatus for improving the internal delay scheme of a wide band oscilloscope comprising,

means for providing an electrical signal of interest to be displayed on said oscilloscope,

means for converting said electrical signal into a corresponding optical signal,

means for delaying said optical signal for a predetermined period of time,

means for generating a sweep trigger signal for said oscilloscope which is arranged to begin the sweep of said oscilloscope the desired number of nanoseconds before said delayed optical signal after being re-converted to an electrical signal arrives at the signal input of said oscilloscope's deflection plates,

means for re-converting said delayed optical signal to an electrical signal and,

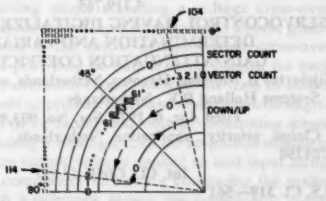
means for inputting said electrical signal to the deflection plate input of said oscilloscope.

4,219,763

RADIAL SWEEP GENERATOR CIRCUIT

James Dalke, Bellevue, Wash., assignor to Arvin Industries, Inc., Columbus, Ind.

Filed Aug. 14, 1978, Ser. No. 933,428
Int. Cl.[2] H01J *29/78*
U.S. Cl. 315—378 **5 Claims**



1. A radial sweep generator circuit for generating a series of radial sweep lines in succession to simulate a rotating sweep line which extends from the center of a video display to the

periphery of the display and which rotates about the center of the display, the display consisting of a ractangular matrix of display positions arranged in lines and columns which are scanned in a raster scanning format with successive display positions being scanned in synchronization with a clock pulse train, comprising:

vector number generator means for generating a vector number signal corresponding to one of said series of radial sweep lines which is to be displayed,

vector origin counter means, responsive to said clock pulse train, and to said vector number generator means, for providing an origin signal as the origin matrix position on the periphery of the matrix display from which the sweep line is to emanate is scanned, and

vector line generator means, responsive to said vector number generator means and to said vector origin counter means, for providing video display pulses as selected display positions are scanned during scanning of said rectangular matrix of display positions in a raster scanning format such that a sweep line emanating from said vector origin matrix position and passing throught the center of said matrix of display positions may be displayed.

4,219,764

APPARATUS FOR USE WITH A MOTOR DRIVE

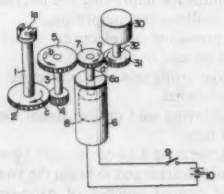
Katumi Terada, and Kazuyuki Nemoto, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 17, 1977, Ser. No. 807,396

Claims priority, application Japan, Jul. 9, 1976, 51-92171[U]

Int. Cl.[2] H02P *1/54*

U.S. Cl. 318—48 **2 Claims**



1. Apparatus for use in cancelling the jolt caused by the sudden stopping and/or starting of a drive motor, said drive motor comprising a rotor and a first gear drivable by said rotor, the apparatus comprising:

balancing means having a rotatable member whose inertial characteristics resemble the rotor of said drive motor;

a second gear coupled to rotate with said rotatable member and engaging said first gear;

an output shaft 1;

coupling gears meshing with one of said first and second gears for driving said output shaft whereby said rotor and said rotating member rotate in opposite directions so that their reaction energies caused by sudden stops or starts of the drive motor tend to cancel one another.

4,219,765

SERVOCONTROL HAVING DIGITALIZED DISTANCE DETERMINATION AND VARIABLE GAIN/ATTENUATION COEFFICIENTS

Gijsbertus B. Morsing, Heumen, Netherlands, assignor to Daisy Systems Holland B.V., Netherlands

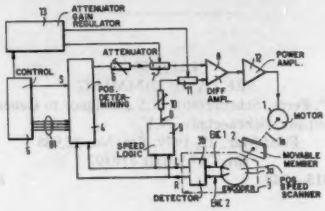
Filed Apr. 6, 1978, Ser. No. 893,896

Claims priority, application Netherlands, Apr. 19, 1977, 7704258

Int. Cl.[2] G05B *13/00*

U.S. Cl. 318—561 **7 Claims**

1. A servo system for controlling the position and speed of members coupled to the shaft of a motor, comprising a position-speed scanner coupled to said shaft and producing at least two encoded cyclic position signals which are phase-shifted relative to each other, each cycle of said position signals being proportional to a predetermined unit of relative rotation of said motor shaft; speed logic means for generating from said encoded position signals output analog signals that are representative of the actual instantaneous speed of rotation of the motor shaft; motor position determining means in which said encoded position signals are converted into analog signals that are indicative of the angular rotation to be still performed by said motor shaft; and a differential amplifier in which the output signals from said speed logic means are compared with the analog signals from said motor position determining means so as to generate a difference signal that is applied to a power amplifier in which said difference signal is converted into an



amplified current signal that is applied to the motor windings so as to control the position and speed of the members coupled to said motor shaft, characterized in that attenuating means are provided which affect the input signal of said power amplifier by independently controlling the transmission functions of both the analog motor position signal and the analog speed signal to said input signal, the control being made dependent upon the operative-rest condition of said members coupled to said motor shaft, wherein said operative condition is valid while said members are moved to a desired position or accurately kept at a desired position and wherein said rest condition is valid when said accurate positioning of said members is no longer required to avoid oscillations due to a nonideal position indication or a nonideal tachometer behavior.

4,219,766

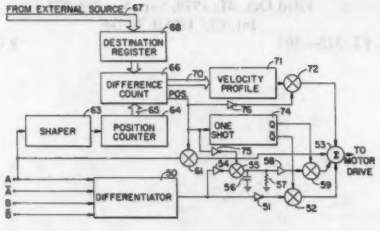
HYBRID DUAL MODE SERVO-SYSTEM

Frank W. Lin, San Jose, Calif., assignor to Qume Corporation, San Jose, Calif.

Filed Mar. 27, 1978, Ser. No. 890,051

Int. Cl.[2] G05B *11/18*

U.S. Cl. 318—594 **21 Claims**



1. Apparatus for controlling the motion of a movable member along a path from a starting position to a destination position, said apparatus comprising:

means for generating a signal representative of the instantaneous position of said movable member;

means for generating a signal representative of the instantaneous velocity of said movable member;

means for generating a synthetic velocity signal from said

instantaneous velocity signal during a predetermined final portion of said path, and

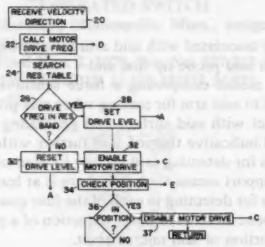
control means coupled to said position signal generating means, said synthetic velocity signal generating means and said velocity signal generating means for controlling the motion of said movable member in accordance with said instantaneous velocity signal during a given portion of said path and in accordance with said position signal and said synthetic velocity signal during said first portion of said path.

4,219,767

SYSTEM AND METHOD OF MINIMIZING VELOCITY FLUCTUATIONS IN A SYNCHRONOUS MOTOR SHAFT

Guenther W. Wimmer, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Mar. 29, 1979, Ser. No. 25,220
Int. Cl.[2] G05B *19/40*
U.S. Cl. 318—696 **14 Claims**



1. Motor control means within a motor drive system for minimizing fluctuations in the angular velocity of the rotor element of a synchronous motor operated in the slewing mode, said means comprising:

(a) means for storing a signal representative of a drive frequency at which the angular velocity of said rotor element is known to fluctuate resonantly when operated in a continuous unidirectional mode;

(b) means for receiving a signal representative of a drive frequency at which it is desired to operate said motor;

(c) means associated with said storing means and said receiving means for comparing said desired frequency signal with said resonant frequency signal;

(d) means for producing a motor drive signal having a frequency proportional to the frequency represented by said desired frequency signal; and

(e) means responsive to said comparison of said desired frequency signal and said resonant frequency signal for applying said drive signal to said motor at a first preselected amplitude if said signals are not equal and at a second preselected amplitude if said signals are equal.

4,219,768

METHOD FOR REGULATING THE VOLTAGE OF AN ELECTRIC GENERATOR AND A SYSTEM FOR THE APPLICATION OF SAID METHOD

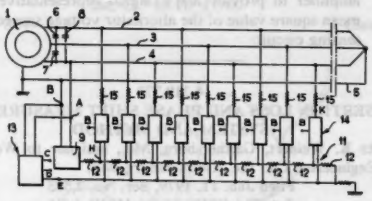
Michel Gobaud, Angouleme, France, assignor to Moteurs Leroy-Somer, Angouleme, France

Filed Dec. 12, 1978, Ser. No. 968,787
Claims priority, application France, Dec. 27, 1977, 77 39289
Int. Cl.[2] H02P *9/00*
U.S. Cl. 322—8 **7 Claims**

1. A method for regulating the terminal voltage of an independent, variable-speed alternating-current generator such as a generator driven by a machine under the action of a natural fluid and especially an asynchronous generator, wherein said method consists in carrying out the following operations:

(a) the voltage is measured in at least one of the phases of the generator;

(b) the frequency is measured and adjusted automatically with respect to a reference value by putting dissipative resistors in circuit;



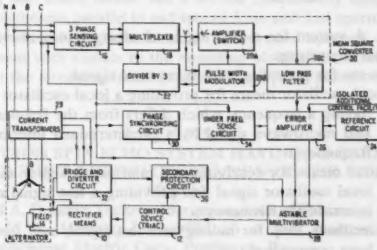
(c) the reference value of the frequency is varied automatically as a function of the variations in voltage, the variation in reference value being in the opposite direction to the variation in measured voltage.

4,219,769

AUTOMATIC VOLTAGE REGULATOR

Alistair A. Macfarlane, East Kilbride, and Ross C. McKemmie, Giffnock, both of Scotland, assignors to Contrology Techniques Limited, Glasgow, Scotland

Filed Dec. 8, 1978, Ser. No. 968,030
Int. Cl.[2] H02P *9/14, 9/30*
U.S. Cl. 322—28 **4 Claims**



1. A voltage regulator for an alternator having a field winding, said regulator comprising:

input terminals for connection to the alternator output,

output terminals for connection to the alternator field winding,

a field-winding excitation control circuit connected across said input terminals and including full wave rectification means arranged to supply a direct current to said output terminals, and current control means,

drive means for said field-winding-excitation control circuit and connected to said current control means, and

voltage monitoring means including a voltage cross-over detector coupled to said input terminals and a pulse generator connected to the output of said voltage cross-over detector and providing an output control signal for each half cycle of alternator output voltage, the train of output control signals so produced being coupled controllably to operate said drive means said voltage monitoring means further including a sensing circuit for amplitude sensing of the alternator output voltage applied to said input terminals, and a comparator circuit for comparing the sensed voltage with a reference means, the comparator output being coupled to said pulse generator to control the mark-to-space ratio of said train of control signals wherein said amplitude sensing circuit comprises amplitude sampling means, a pulse width modulator incorporating a free-run-

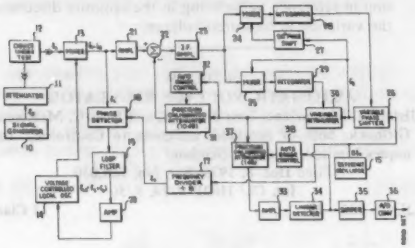
ning square wave generator the mark-to-space ratio of which is controllable in accordance with the output of said sampling means, a polarity-reversible amplifier coupled to the output of said sampling means and polarity controlled in accordance with the polarity of the sampled voltage, and a low-pass filter coupled to the output of said amplifier to provide a d.c. signal representative of the mean square value of the alternator voltage sensed by the sensing circuit.

4,219,770

INSERTION LOSS AND PHASE SHIFT MEASUREMENT SYSTEM AND METHOD

Fritz K. Weinert, Gaithersburg, Md., assignor to Weinschel Engineering Co., Inc., Gaithersburg, Md.

Filed Jan. 11, 1979, Ser. No. 2,585
Int. Cl.[2] G01N *27/04;* H03B *3/04*
U.S. Cl. 324—58 A **25 Claims**



1. A system for measuring level changes in a microwave signal comprising:
- means for providing said microwave signal;
- local oscillator means for providing a local oscillator signal having a frequency which differs from the frequency of said microwave signal by a predetermined intermediate frequency;
- mixer means for receiving said microwave signal and said local oscillator signal and providing a test signal at said intermediate frequency;
- a feedback loop for nulling said test signal, said feedback loop comprising:
  - signal comparison means for comparing said test signal with a nulling signal to provide an error signal at said predetermined intermediate frequency representing the phase and amplitude difference between said test and nulling signals;
  - intermediate frequency amplifier means for amplifying said error signal;
  - control means responsive to the amplified error signal for providing a feedback signal which varies in accordance with variations in said error signal; and
  - adjustable precision calibrated attenuator means for attenuating said feedback signal to provide said nulling signal to said signal comparison means; and
- metering means for monitoring said feedback signal.

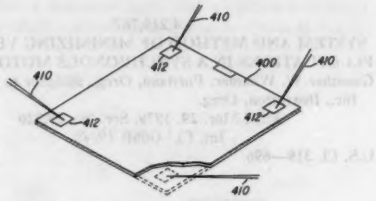
4,219,771

FOUR-QUADRANT, MULTIPROBE-EDGE SENSOR FOR SEMICONDUCTOR WAFER PROBING

Lee R. Reid, Plano, and Charles R. Ratliff, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 21, 1978, Ser. No. 879,038
Int. Cl.[2] G01R *31/02, 31/22*
U.S. Cl. 324—158 P **14 Claims**

1. A four-quadrant edge detector assembly comprising:
- electrical support means for locating a plurality of data probes for testing microcircuits disposed on a semiconductor surface; and
- means for detecting said surface with each of said means having,
  - a support body,
  - an arm connected to said support body and extending therefrom in an angular fashion,
  - a probe tip having an angular point connected to said arm and extending therefrom,
  - adjustable means attached to said support body and operatively associated with said arm for altering the plane in which said probe tip lies, and
  - sensing means comprising a force sensitive material secured to said arm for sensing when said probe tip makes contact with said surface and generating an electrical signal indicative thereof, and further with each of said means for detecting said surface located on said electrical support means such that there is at least one of said means for detecting in each of the four quadrants of said microcircuit so as to allow detection of a partially present portion of said microcircuit.

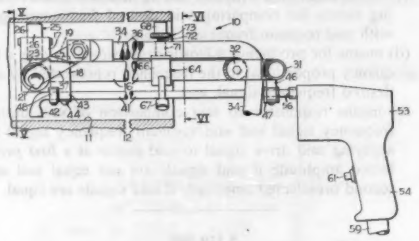


4,219,772

APPARATUS FOR NONDESTRUCTIVE TESTING OF SMALL BLIND BORES UTILIZING THE DRY MAGNETIC PARTICLE METHOD

Carl A. Naylor, York, Pa., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Jul. 25, 1978, Ser. No. 927,772
Int. Cl.[2] G01R *33/00*
U.S. Cl. 324—216 **11 Claims**



1. Apparatus for dry magnetic particle testing of blind bores of a workpiece;
- a frame;
- a prod head supported on said frame for movement with said frame;
- a pair of electrical contact prods carried by said prod head in spaced apart relationship and in position to engage with the wall of the bore upon insertion of the apparatus into a bore of a workpiece;
- means to electrically insulate said prods from said frame and from each other;
- yieldable means to urge said prods into pressure contact with the wall of the bore carried by said prod head and

operatively positioned to engage the wall of the bore to develop a reaction force for urging said prods into pressure contact with the wall of the bore;

a particle supply gun carried by said frame;

a particle supply tube carried by said frame in position to direct particles to an area of the wall of the bore between said spaced apart prods, said particle supply tube being operatively connected to receive particles released by said gun;

manual operable control means on said gun to effect a release of particles from said gun to said particle supply tube; and,

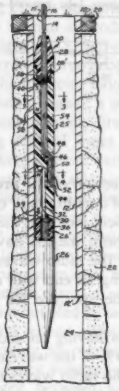
separate electrical cables from a source of electrical energy connected to each of said electrical contact prods to energize them individually.

4,219,773

WELL CASING FINDER INSTRUMENT WITH MOVABLE MAGNET AND MAGNETICALLY OPERATED SWITCH

Reinhold S. Markfelt, Minneapolis, Minn., assignor to UOP Inc., Des Plaines, Ill.

Filed Nov. 2, 1978, Ser. No. 957,262
Int. Cl.[2] G01R *33/00*; H01H *36/00*
U.S. Cl. 324—221 **5 Claims**



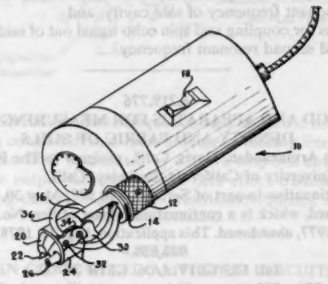
1. An instrument for locating the depth of the end of an unknown length of well casing comprising an electrically conducting cable member, an elongated body member suspended from said cable member, a fixed magnet member positioned internally of said body member adjacent one side surface of said body member, a magnetically operated switch positioned inside said body member, said switch having a pair of contacts connected to conductors in said cable which are adapted to operate an indicator device, said contacts being movable into or out of contact with each other by changes in the proximity of a radially movable magnet located within said body member at an axial distance from said fixed magnet, said magnets having their axes in the same radial plane and said movable magnet being generally axially aligned with said fixed magnet when in its radially outermost position, said movable magnet being magnetically biased to its radially outermost position when magnetically attracted material is located immediately adjacent the outer surface of the instrument, and said movable magnet being magnetically biased to its radially innermost position by the attraction of one or more of the contacts of said switch when no magnetically attracted material is located immediately adjacent the outer surface of said instrument.

4,219,774

AUTOMATIC EDDY CURRENT SURFACE PROBE FOR FASTENER HOLES

Albert P. Rogel, 2655 Ellenbrook Dr., Rancho Cordova, Calif. 95670, and Joseph J. Scalese, 5531 Laird Way, Loomis, Calif. 95650

Filed Aug. 25, 1978, Ser. No. 937,020
Int. Cl.[2] G01R *33/00*
U.S. Cl. 324—262 **4 Claims**



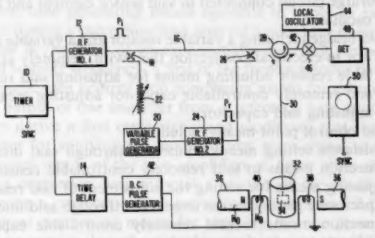
1. An automatic eddy current surface probe adapted for use with a motorized probe driving means including a rotatable drive spindle comprising: an elongated shank means having a threaded portion at one end adapted to engage the rotatable drive spindle and having a pivot point at the other end; a mounting block having a first aperture therethrough for receiving said shank means, and a second cylindrically shaped aperture therein, parallel to and spaced from said first aperture; an eddy current probe mounted in said second aperture, for movement with respect to the mounting block and extending beyond the mounting block parallel to said pivot point.

4,219,775

ELECTRON SPIN ECHO SYSTEM HAVING MAGNETIC FIELD SHIFT DURING GENERATION OF THE ECHO SIGNAL

Donald A. Bozanic; Dickron Mergerian, both of Baltimore, and Ronald W. Minarik, Lutherville, all of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 11, 1969, Ser. No. 832,101
Int. Cl.[2] G01R *23/02*
U.S. Cl. 324—313 **9 Claims**



1. An electron spin echo system comprising in combination:

a resonant cavity having a paramagnetic spin echo sample located therein and having a first and a second resonant frequency in a predetermined frequency range of selected Larmor frequencies of said spin echo sample, said cavity being further characterized by having a relatively high Q for said first resonant frequency and having a relatively low Q for said second resonant frequency;

means for supplying a static unidirectional magnetic field through said spin echo sample;
means for generating first and second RF pulses separated by a predetermined time interval;
means for coupling said first and said second RF pulses into said resonant cavity;
means for changing the magnitude of the unidirectional magnetic field through said spin echo sample after the application of said first and said second Rf pulses and during the time a spin echo signal is generated whereby the spin echo signal is shifted in frequency to said second resonant frequency of said cavity; and
means for coupling said spin echo signal out of said cavity at said second resonant frequency.

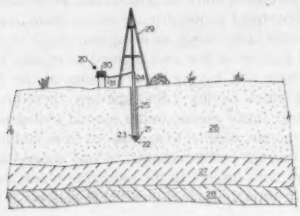
4,219,776
METHOD AND APPARATUS FOR MEASURING IN SITU DENSITY AND FABRIC OF SOILS

Kandiah Arulanandan, Davis, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Continuation-in-part of Ser. No. 910,577, May 30, 1978, abandoned, which is a continuation-in-part of Ser. No. 831,877, Sep. 9, 1977, abandoned. This application Aug. 25, 1978, Ser. No. 936,836

Int. Cl.[2] **G01V** *3/06;* **G01R** *27/00*

U.S. Cl. 324—323 **54 Claims**



13. Apparatus for measuring in situ the resistance and capacitance at radio frequency of soils, including sands and silts, to enable evaluation of density and fabric thereof, said apparatus comprising probe head means, control point means, and interconnection means for electrically interconnecting said probe head means with said control point means,

said probe head means adapted for being driven into the soil to be tested to a fixed depth and including:

a sensor element,

an oscillator providing a radio-frequency current output signal at a predetermined frequency and amplitude,

a bridge circuit connected to said sensor element and to said oscillator,

said bridge including a variable resistor and a variable capacitor in electrical connection therewith, remotely controllable resistor adjusting means for adjusting said resistor, and remotely controllable capacitor adjusting means for adjusting said capacitor,

said control point means including:

resistance setting means connected through said interconnection means to said remotely controllable resistor adjusting means for setting the adjustment of said resistor,

capacitance setting means connected through said interconnection means to said remotely controllable capacitor adjusting means for setting the adjustment of said capacitor,

null point indicator means connected through said interconnection means to said capacitance bridge, for indicating a null point of said bridge,

resistance indication means correlated to the setting of said resistor for indicating soil sample resistance in accordance with the setting of said resistor upon indication of null point of said bridge,

capacitance indication means correlated to the setting of said capacitor for indicating soil sample capacitance in accordance with the setting of said capacitor upon indication of null point of said bridge,

whereby when said probe head means is driven into the soil to be tested and said sensor element comes into physical proximity and electrical contact with a sample of said soil at said fixed depth, and said bridge is balanced by adjustment at said control point means of said variable resistor and said variable capacitor, the resistance and capacitance of said coil sample at radio frequency may be measured in situ, thereby enabling evaluation of density and fabric thereof.

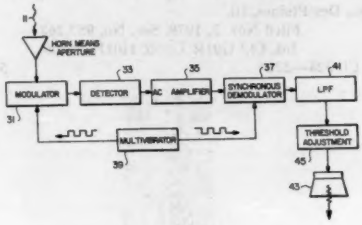
4,219,777
DETECTOR FOR MULTIPLICITY OF RADIO WAVE FREQUENCIES

David Richardson, 2588 Knights Bridge La., Santa Clara, Calif. 95051

Filed Dec. 5, 1977, Ser. No. 857,468

Int. Cl.[2] **H04B** *1/26;* **H01Q** *13/10*

U.S. Cl. 455—227 **41 Claims**



1. Apparatus for detection of the presence of incident ratio waves of at least one of a multiplicity of substantially separate frequencies in the ambient medium, the apparatus comprising:

radiation-receiving horn means, having an entrance aperture, for receiving the radio waves;

the horn means having an end wall containing at least two apertures, with one aperture for each frequency to be detected;

each of the apertures having an end wall length L that is substantially 25–50% of the wavelength corresponding to the frequency of the radio waves to be detected;

a wave guide associated with each aperture, positioned within the horn end wall and terminating at the associated aperture, and having substantially the same transverse cross section dimensions as the associated end wall aperture;

modulation circuit means, one being operatively associated with each waveguide, for generating a modulation signal and for impressing the modulation signal upon the radio wave signal received by the aperture and associated waveguide, to produce a modulated radio wave signal;

detection circuit means, one being operatively associated with each waveguide and the associated modulation circuit means, for receiving the modulated radio wave signal of the appropriate frequency and for generating a modulation envelope signal that is substantially a replica of the modulation signal;

demodulation means for receiving the modulation signal and the modulation envelope signal and, in response thereto, for generating a demodulated signal that is substantially the product of the two signals received;

an ac amplifier through which the modulation envelope signal is passed to the demodulation means; and

output signal means for receiving the demodulated signal and, in response thereto, for generating an output signal, indicative of the presence of the radio wave frequency to

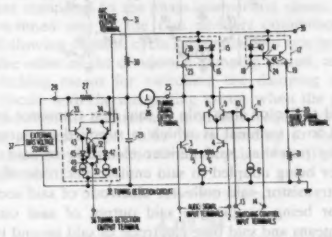
be detected, which is perceived by an operator of the apparatus.

4,219,778

SIGNAL PROCESSING CIRCUIT FOR AN FM SIGNAL RECEIVER

Eiichi Ishii, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Feb. 21, 1979, Ser. No. 14,013
Claims priority, application Japan, Feb. 20, 1978, 53-18887
Int. Cl.[2] H04B 1/16
U.S. Cl. 455—205 **7 Claims**



1. A signal processing circuit comprising: an amplifier circuit receiving first and second demodulated signals of the frequency modulated signal and deriving first and second output signals, a first current source producing a first constant current, a current switching circuit having a first input point receiving said second output signal, a second input point receiving said first constant current, first and second output points and a switching control input means, said current switching curcuit switching current paths from said first and second input points to said first and second output points in response to signal applied to said switching control input means, a first current mirror having an input point coupled to said second output point of said current switching circuit and an output point coupled to said first output signal of said amplifier circuit, a second current mirror having an input point coupled to said first output point of said current switching circuit, a first output point coupled to said output point of said first current mirror, and a second output point coupled to an output terminal for deriving an output signal of said signal processing circuit, a reference voltage terminal and a null-centered indicator connected between said reference voltage terminal and connection means between said output point of said first current mirror and said first output point of said second current mirror.

4,219,779

SELF-OSCILLATING MIXER CIRCUIT

Keiro Shinkawa, Yokohama; Hiroji Shoyama, Fukuoka; Chuichi Sodeyama, Yokohama, and Mitsuhisa Shinagawa, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Apr. 17, 1978, Ser. No. 897,118
Claims priority, application Japan, Apr. 18, 1977, 52-43575
Int. Cl.[2] H04B 1/26
U.S. Cl. 455—321 **6 Claims**

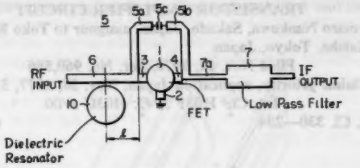
1. A self-oscillating mixer circuit adapted for converting a radio frequency signal of SHF-band into an intermediate frequency signal, comprising:

a field effect transistor having a control terminal, a common terminal and an output terminal;

a feedback path connected between the control terminal and the output terminal of said field effect transistor and adapted to provide a positive feedback of a signal having a desired oscillator frequency to said control terminal from said output terminal;

a micro strip line connected to the control terminal of said field effect transistor and adapted to feed said radio frequency signal thereto;

a dielectric resonator of a solid body formed of a dielectric material and having a resonant frequency coincident with



said desired oscillator frequency, said dielectric resonator being coupled to said radio frequency feeding line; and

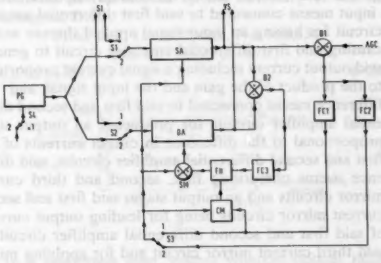
a low-pass filter constituted by a micro strip line connected to the output terminal of said field effect transistor and passing therethrough the intermediate frequency signal.

4,219,780

GAIN CONTROLLED AMPLIFIER CIRCUITS

John F. Rouiston, Kirkliston, and George Weeden, Edinburgh, both of Scotland, assignors to Ferranti Limited, Hollinwood, England

Filed Jan. 16, 1979, Ser. No. 3,913
Claims priority, application United Kingdom, Jan. 18, 1978, 1928/78
Int. Cl.[2] H03G 3/20
U.S. Cl. 330—52 **6 Claims**



1. A gain-controlled amplifier circuit having three distinct feedback loops which comprises a pair of gain-controlled amplifiers, tone generating means operable to apply to each amplifier during a correction time interval a pilot tone of equal amplitude in the form of an exponentially-decaying periodic signal of suitable frequency, a first of the feedback loops being an automatic gain control loop comprising means for subtracting the output of one amplifier from a reference gain control signal to derive a first error signal and modifying that signal and means for applying the modified first error signal to the gain control inputs of the two amplifiers at times other than during a correction time interval a second of the feedback loops being a correction loop providing a compensated first error signal comprising means for applying the compensated first error signal to the gain control inputs of the two amplifiers during each correction time interval, a third of the feedback loops being an amplifier gain control loop providing a second error signal by subtracting the outputs of the two amplifiers to derive the second error signal, storage means for holding a corrected second error signal and means for applying the stored signal to the gain control input of the other amplifier in combination with the modified first error signal of the compensated first error signal, and control means operable to allow the signal held by the storage means to change to the current value

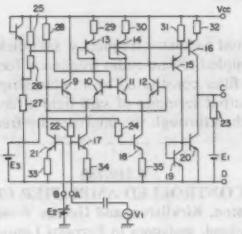
of the corrected second error signal only during that part of a correction time interval during which the compensated first error signal is greater than the modified first error signal.

4,219,781

TRANSISTOR AMPLIFIER CIRCUIT

Toyoziro Naokawa, Sakado, Japan, assignor to Toko Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 14, 1978, Ser. No. 960,556
Claims priority, application Japan, Nov. 24, 1977, 52-139925
Int. Cl.³ H03F 3/45; H03G 3/00
U.S. Cl. 330—254 **4 Claims**



1. A transistor amplifier circuit comprising:
first and second gain controlled differential amplifier circuits, each for generating an output current including a dc bias current proportional to the gain thereof;
a gain control means connected to said first and second differential amplifier circuits for jointly controlling the gain of said first and second differential amplifier circuits;
an input means connected to said first differential amplifier circuit for having an input signal applied thereto and for causing said first differential amplifier circuit to generate said output current including a signal current proportional to the product of the gain and the input signal; and
a difference means connected to said first and second differential amplifier circuits for producing an output signal proportional to the difference in output currents of said first and second differential amplifier circuits, said difference means comprising first, second and third current mirror circuits and an output stage, said first and second current mirror circuits being for leading output currents of said first and second differential amplifier circuits to said third current mirror circuit and for applying mirror currents of said first and second current mirror circuits to said third current mirror circuit and said output stage including a dc stabilization power source for supplying a current to said third current mirror circuit from said dc stabilization power source to produce said output signal which is independent of output currents of said first and second differential amplifier circuits.

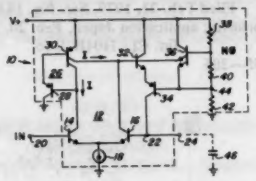
4,219,782

UNITY GAIN AMPLIFIER FOR SOURCING CURRENT TO A CAPACITIVE LOAD OR THE LIKE

Marc T. Stein, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 8, 1978, Ser. No. 967,824
Int. Cl.² H03F 3/45
U.S. Cl. 330—257 **13 Claims**

1. Unity gain integrated amplifier for sourcing current to a load in response to an input signal being applied to an input terminal thereof and including an output terminal; comprising:
a differential amplifier having first and second inputs and outputs respectively, said first input being coupled to the input terminal of the unity gain amplifier; and
output circuit means coupled to said outputs of said differential amplifier and having an output coupled both to said second input of said amplifier means and to the output terminal of the unity gain amplifier for providing internal feedback to said second input of said amplifier means and for sourcing current to the load from a high impedance source, said output circuit means including first and second transistors each having emitter, collector and base electrodes, said base electrode of said first transistor being coupled to said second output of said differential amplifier, said collector electrode of said first transistor being coupled to a terminal at which is supplied a source of operating potential, said emitter electrode of said first transistor being coupled to said emitter electrode of said second transistor, said collector electrode of said second transistor being coupled to said output of said output circuit means and said base electrode of said second transistor receiving a predetermined bias potential.

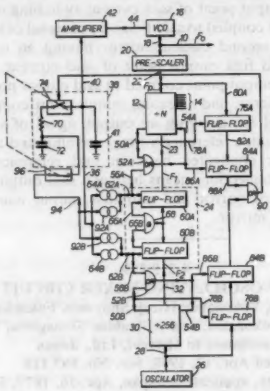


4,219,783

PHASE LOCKED LOOP WITH RAPID PHASE PULL IN

Margaret P. Carter, Harrow, and David Hodgson, Aston Rowant, both of England, assignors to British Communications Corporation, Ltd., England

Filed Jul. 7, 1978, Ser. No. 922,734
Claims priority, application United Kingdom, Apr. 28, 1978, 17023/78
Int. Cl.² H03B 3/04
U.S. Cl. 331—1 A **5 Claims**



1. An automatic frequency tuning system, comprising
a fixed frequency oscillator,
a first frequency divider having a fixed division factor and connected to be fed by the fixed frequency oscillator so as to produce a reference frequency,
a variable frequency oscillator,
a second divider having a variable division factor and connected to be fed by the variable frequency oscillator so as to produce a variable control frequency,
phase comparison means connected to receive and compare the phases of the reference and control frequencies whereby to produce a control output having a magnitude

and sense dependent on the magnitude and sense of a phase error between the two frequencies compared,

integrating means connected to integrate the control output,

adjusting means responsive to the integrated control output and connected to adjust the frequency of the variable frequency oscillator in a sense and by an amount such as to tend to equalize the phases and frequencies of the control and reference frequencies, whereby to bring the output frequency of the variable frequency oscillator to a desired value,

re-timing means responsive to detection of the said phase error by the phase comparison means and connected to re-time the one of the two dividers producing the instantaneously earlier one of the two frequencies whose phases are compared by the phase comparison means, so that the re-timed one of the two dividers commences its next following division cycle substantially in synchronism with the other of the dividers, a damping circuit, and

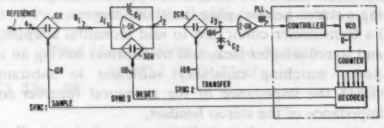
switching means for switching the damping circuit into circuit with the integrating means when the phase error between the control and reference frequencies is less than a predetermined value corresponding to the minimum amount by which the division cycles of the dividers can be altered.

4,219,784

PHASE DETECTION SYSTEM USING SAMPLE AND HOLD TECHNIQUE, AND PHASE LOCKED LOOP USING SUCH PHASE DETECTION SYSTEM

Richard L. Detering, Buffalo, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 27, 1978, Ser. No. 956,141
Int. Cl.[2] H03B 3/04
U.S. Cl. 331—27 **3 Claims**



1. A phase detector apparatus for deriving an indication of the phase difference between first and second alternating-current signals having a fixed periodicity relationship, comprising:

means for establishing by reference to said second signal a predetermined time interval centered on a zero-crossing point thereof;

means for integrating said first signal during said time interval to derive an integrated value; and

means responsive to said integrated value for providing an indicative signal characteristic of said phase difference.

4,219,785

OPTICAL BEAM SCANNING BY PHASE DELAYS

Donald R. Scifres, Los Altos; Robert D. Burnham, Los Altos Hills, and William Streifer, Palo Alto, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 26, 1978, Ser. No. 918,740
Int. Cl.[2] H01S 3/19
U.S. Cl. 331—94.5 H **13 Claims**

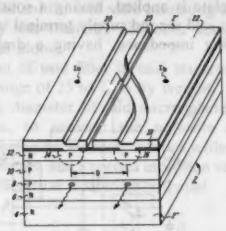
1. A monolithic semiconductor device for providing a light beam scanner of the moving interference fringe type comprising:

a plurality of layers of semiconductor material, one of said layers being a light waveguide layer, said light waveguide layer and another of said layers in contact with said light waveguide layer being doped such that a rectifying junction is formed at the interface therebetween,

means for forward biasing selected portions of said rectifying junction to produce an injection of minority carriers into selected portions of said light waveguide layer,

means for establishing a plurality of resonant cavities each including at least one of said selected portions of said light waveguide to produce in conjunction with said means for forward biasing a plurality of laser beams, said resonant cavities being optically coupled,

a light output region for each of said plurality of laser beams, said light output regions being disposed such that said laser



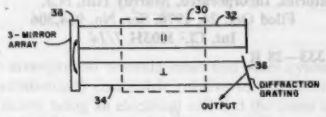
beams are optically uncoupled at said light output regions, and

means operatively associated with at least one of said resonant cavities for producing a relative phase change between light radiation in said resonant cavities whereby the far field interference fringes produced by said laser beams exiting said light output regions are spatially scanned.

4,219,786

POLARIZATION SUPPRESSION OF PARASITIC MODES

Arthur N. Chester, Malibu, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 11, 1978, Ser. No. 968,131
Int. Cl.[3] H01S 3/081
U.S. Cl. 331—94.5 C **6 Claims**

1. In a multi-pass laser system wherein optical radiation through the laser medium passes through a plurality of closely adjacent optical paths for providing a single oscillating mode, the improvement of: means for selecting a single polarization of laser radiation, and means for altering the polarization of the radiation so that any two immediately adjacent optical passes have orthogonal polarizations.

4,219,787

RELAXATION OSCILLATOR NOT RESTRICTED BY FET THRESHOLD

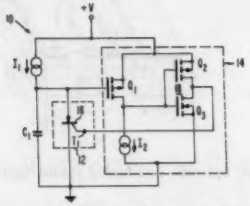
Otto H. Schade, Jr., North Caldwell, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 6, 1978, Ser. No. 958,018
Claims priority, application United Kingdom, Nov. 25, 1977, 49126/77; Oct. 24, 1978, 41751/78
Int. Cl.[2] H03K 3/26
U.S. Cl. 331—111 **18 Claims**

1. In a relaxation oscillator of the type wherein first and second supply terminals receive reference and operating potentials, respectively; a timing capacitor includes first and second plates, with said first plate being connected to said first supply terminal and said second plate being connected to charging circuitry to receive current of a polarity tending to bring it closer to said operating potential; a threshold means

generates a control signal when the voltage across said timing capacitor reaches a predetermined value; and a switch means selectively completes a conductive path between said first and second plates in response to said control signal, the improvement comprising:

said threshold means including a first MOS transistor having a gate electrode to which the voltage appearing at said second plate is applied, having a source electrode connected at said second supply terminal without substantial intervening impedance, having a drain electrode, and



being of a conductivity type such that it is conductive while the voltage across said timing capacitor is smaller than said predetermined value and is decreasingly conductive while the voltage across said timing capacitor is larger than said predetermined value; and

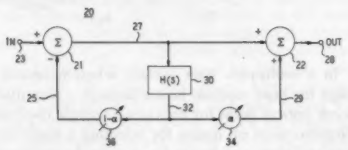
circuit means responsive to the reduction of current through the source-drain channel of said first MOS transistor when the voltage across said timing capacitor reaches said predetermined value, which current is reduced below a threshold value for providing said control signal.

4,219,788

ACTIVE VARIABLE EQUALIZER

Robert R. Cordell, Tinton Falls, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 24, 1978, Ser. No. 954,306
Int. Cl.[2] H03H *7/14*
U.S. Cl. 333—28 R **7 Claims**



1. An active variable equalizer circuit comprising

first and second combining circuits,

the first combining circuit being responsive to an input signal and a negative feedback signal for producing an intermediate signal,

the second combining circuit being responsive to the intermediate signal and to an additive feedforward signal for producing an output signal,

a frequency dependent circuit responsive to the intermediate signal and having a transfer function proportional to H(s) for producing a frequency dependent signal,

means responsive to the frequency dependent signal for splitting the frequency dependent signal into the additive feedforward signal and applying it to the second combining circuit, the additive feedforward signal including a fraction of the frequency dependent signal, and into the negative feedback signal and applying it to the first combining circuit, the negative feedback signal including the remainder of the frequency dependent signal, and

the equalizer circuit transfer function is proportioned at any selected frequency within a range to an expression

$$\frac{1 + xF(s)}{x + F(s)},$$

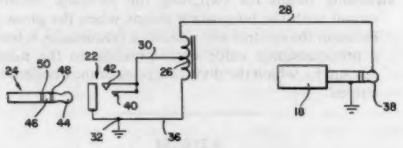
wherein x is the ratio of the fraction of the frequency dependent signal to the remainder of that signal, $F(s)=H(s)+1$ and H(s) is independent of x.

4,219,789

STEREO HEADPHONE ADAPTER

Thomas A. Frangos, 41 Brooklawn Ter., Lynn, Mass. 01904

Filed Oct. 2, 1978, Ser. No. 947,855
Int. Cl.[2] H03H *7/38*
U.S. Cl. 333—32 **5 Claims**



1. An adapter for converting a low impedance stereo headset for use with a high output impedance monaural radio receiver or the like, comprising

(a) a housing,

(b) a monaural adapter plug mounted to and extending from said housing for insertion in a cooperating monaural receiver jack,

(c) a stereo adapter jack mounted to said housing for receiving a stereo headset plug insertable therein,

(d) a transformer connected to said monaural adapter plug and stereo adapter jack, said transformer having an impedance matching capability sufficient to substantially match the impedance of the monaural receiver to the impedance of the stereo headset,

(e) said adapter jack including a pair of electrically connected axially spaced contacts connected to said transformer and adapted to contact the stereo headset plug at different axially spaced points.

4,219,790

CURRENT LIMITING CIRCUIT BREAKER

Pierre Batteux, Vizille, and Robert Morel, Eybens, both of France, assignors to Merlin Gerin, Grenoble, France

Filed Mar. 5, 1979, Ser. No. 17,557
Claims priority, application France, Mar. 31, 1978, 78 09833
Int. Cl.[3] H01H *77/10*
U.S. Cl. 335—16 **7 Claims**

1. A circuit breaker comprising:

a pair of separable contacts,

a contact arm in electrical conductive material carrying one of the said contacts, the circuit through said circuit breaker in the closed position passing through said contact arm and said contacts,

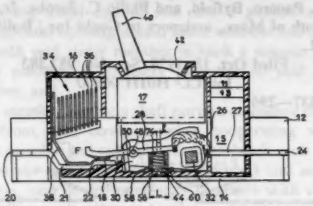
a magnetic device comprising a generally U-shaped magnetic main path having a main air gap, said contact arm extending in said main air gap when in a closed circuit position and a saturable magnetic shunt path,

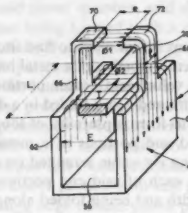
the reluctance of the shunt path being lower than the reluctance of the main path,

a current condition through said circuit breaker below a predetermined value generating magnetic flux mainly flowing in said shunt path,

a current condition through said circuit breaker above a

predetermined value generating magnetic flux saturating said shunt path and flowing mainly in said main path to





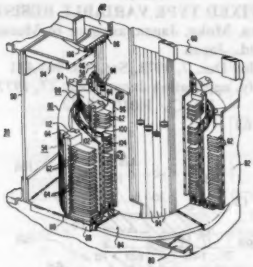
develop an electromagnetic force acting on said contact arm to separate said contacts.

4,219,791

ELECTRICAL INDUCTIVE APPARATUS

Curtis L. Moore, Sharon, and Martin P. Seidel, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 24, 1978, Ser. No. 963,619
Int. Cl.[2] H01F *27/08*
U.S. Cl. 336—58 **11 Claims**



1. Electrical inductive apparatus, comprising:

an enclosure,

an electrical winding in said enclosure adapted for connection to an electrical potential at power frequency, said electrical winding having areas of high electrical stress when connected to the electrical potential,

dielectric means in said enclosure surrounding said electrical winding, said dielectric means having a predetermined dielectric constant which does not exceed about 2.2,

an insulating structure for said electrical winding including solid insulating means, said insulating structure being disposed to add mechanical strength to at least certain of said areas of high electrical stress in said electrical winding, with said insulating structure having a compressive strength exceeding about 6000 psi and sufficient spring-back to retain winding tightness following short circuit mechanical stresses,

said solid insulating means including an adhesive binder having a dielectric constant in the range of about 3 to 4 and a filler which includes microspheres having a dielectric constant of about 1.

said adhesive binder and said filler being selected to provide a dielectric constant for said solid insulating means which is substantially less than the dielectric constant of said adhesive binder alone,

the concentration of said filler in said insulating structure being in the range of 25 to 75% by weight,

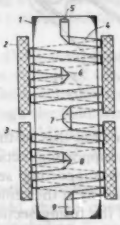
and wherein the diameter of said microspheres is 100 microns, or less, to provide the requisite compressive strength and spring-back characteristics without breakage of the microspheres, and a corona inception value compatible with the electrical operating potential.

4,219,792

DEVICE FOR THE PRESTRESSING OF CONCENTRIC CYLINDERS

Kent Eriksson, and Uno Zetterlund, both of Ludvika, Sweden, assignors to ASEA Aktiebolag, Vesteras, Sweden

Filed Oct. 12, 1978, Ser. No. 950,678
Claims priority, application Sweden, Oct. 13, 1977, 7711513
Int. Cl.[2] H01F *27/08, 27/30*
U.S. Cl. 336—60 **3 Claims**



1. In an arrangement wherein inner and outer cylinders are disposed substantially concentric relative to one another, one of the cylinders being an electrical coil and the outer cylinder having an inner diameter greater than the outer diameter of the inner cylinder so as to define an annular gap between the cylinders, hose means disposed in the gap between the cylinders and being subjected internally to a pressure medium permanently applying compressive stress to the inner cylinder and tensile stress to the outer cylinder, characterized in that said hose means comprises at least one elongated hose helically wound about the inner cylinder between opposite ends of the outer cylinder, said hose being wound with an even number of turns, one-half the number of said turns being wound in one direction and the other half of the number of said turns being wound in a direction opposite said one direction, whereby the sum of the moments of the forces exerted by said hose between the cylinders and occurring about the central axis of the cylinders in a plane containing said axis, is substantially zero.

4,219,793

FUSE WITH PLANAR FUSE ELEMENT

Isao Kawamura, Ohgaki, Japan, assignor to Pacific Engineering Co., Ltd., Ohgaki, Japan

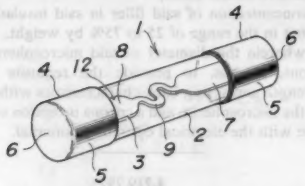
Filed Jan. 3, 1978, Ser. No. 866,624
Claims priority, application Japan, Jan. 31, 1977, 52/10903[U]
Int. Cl.[2] H01H *85/08*
U.S. Cl. 337—228 **4 Claims**

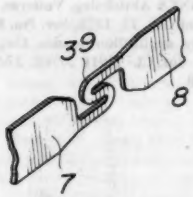
1. A fuse of a quick performance comprising

(a) a slender transparent tube,

(b) cap terminals provided at both ends of said tube so as to close said opening ends,

(c) a generally planar fuse element wherein said cap terminals are connected and which is inserted into said tube, wherein a planar fusing section is longitudinally provided nearly at the center and coplanar and generally rectangle supporting sections integrally extend on the terminal's side from said fusing section and are fixed on each cap terminal, the breadth of the planar surface of the fusing





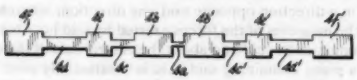
section is narrower than that of the supporting sections, the breadth of both supporting sections becomes gradually narrower and each supporting section has curvilinear sides and is united nearly at the center of its one side to the fusing section, and the fusing section is formed having a smooth S shape with two arcs on the same plane as the coplanar wide surface of the supporting section, whereby a strain generated in a fuse element by the thermal expansion and contracion is equally absorbed in the S-shaped fusing section.

4,219,794

FUSIBLE ELEMENT FOR FUSES

Hiroo Arikawa, Tokyo; Masaya Maruo, and Yasutada Yuza, both of Yokohama, all of Japan, assignors to San-O Industrial Corporation, Tokyo, Japan

Filed Aug. 15, 1978, Ser. No. 933,821
Int. Cl.² H01H *85/04*
U.S. Cl. 337—292 **7 Claims**



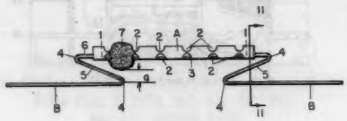
1. A fusible element for use in fuse construction, said fusible element being made of an elongated, heat-conductive metallic substance or alloy and comprising fusible regions of reduced cross-sectional area, including a middle fusible reduced region and at least n spaced apart fusible regions of reduced cross-sectional area, wherein n is an even integer of at least 2, each of said fusible reduced regions is disposed between two unreduced fusible regions of the fusible element, and wherein the cross sectional area of said middle fusible reduced region is less than the cross sectional area of said other fusible reduced regions.

4,219,795

FUSIBLE ELEMENT FOR TIME-LAG FUSES HAVING CURRENT-LIMITING ACTION

Robert J. Panaro, Byfield, and Philip C. Jacobs, Jr., Newtonville, both of Mass., assignors to Gould Inc., Rolling Meadows, Ill.

Filed Oct. 18, 1978, Ser. No. 952,383
Int. Cl.² H01H *00/00*
U.S. Cl. 337—296 **4 Claims**



1. A fusible element for an electric fuse including

(a) a perforated center portion of a metal having a relatively low fusing i^2·t value, said center portion having a relatively large width and being folded in a direction longitudinally thereof to form a plurality of longitudinal edges;

(b) non-perforated end portions of a metal having a relatively high fusing i^2·t value arranged on each end of said center portion, each of said end portions having a relatively small width and being folded along two transverse lines in such a way that a section of each of said end portions overlaps relatively closely a section of said center portion, but does leave a gap between said center portion and said section of each of said end portions; and

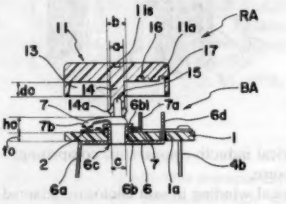
(c) a metal-severing element having a fusing point lower than the fusing point of the metal of said center portion, said metal-severing element being affixed to said center portion at said section thereof that overlaps said section of one of said end portions so that said metal-severing element, in addition to being directly heated by i^2·r losses in said center portion, is also heated by convection, conduction and radiation occurring across said gap between said center portion and said section of one of said end portions.

4,219,796

SEMI-FIXED TYPE VARIABLE RESISTOR

Hideo Nishizawa, Muko, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Dec. 7, 1978, Ser. No. 967,481
Claims priority, application Japan, Dec. 17, 1977, 52-170126
Int. Cl.² H01C *10/32*
U.S. Cl. 338—163 **9 Claims**



1. A variable resistor for use in electrical and electronic equipment comprising:

an electrically insulating substrate member having an arcuate resistor member provided on one surface thereof, an opening being formed in said substrate member at a center of an arc defined by said arcuate resistor member;

an electrically conductive plate member having a sleeve portion extending upwardly therefrom, said sleeve portion being inserted into said opening from a second surface of said substrate member in such a manner that said conductive plate member contacts said second surface of said

substrate member and the distal end of said sleeve portion projects from said one surface of said substrate member;

a slider member having an opening formed therein, said projecting distal end of said sleeve portion extending through said opening in said slider member and cooperating with said slider member in such a manner that said slider member is rotatably mounted on said substrate member; and

a cover member having a shaft portion extending outwardly therefrom, said cover member cooperating with said slider member and said substrate member in such a manner that when said shaft portion is inserted into said sleeve portion, said cover member is rotatable with respect to said substrate member and causes a sliding portion of said slider member to slide over said resistor member upon rotation of said cover member, said shaft portion of said cover member being formed with a retaining protrusion extending radially from a peripheral portion at a distal end of said shaft portion and having a maximum diameter larger than the internal diameter of said sleeve portion, said retaining protrusion being sufficiently resilient to permit said protrusion to be inserted by hand through said sleeve portion but to retain said cover member on said substrate member after said protrusion has been inserted through said sleeve portion with said protrusion engaging a corresponding edge of said sleeve portion for rotatably mounting said cover member on said sleeve portion.

4,219,797

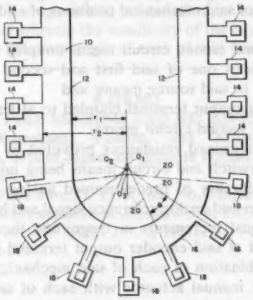
INTEGRATED CIRCUIT RESISTANCE LADDER HAVING CURVILINEAR CONNECTING SEGMENTS

Jen-yen Huang, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Mar. 19, 1979, Ser. No. 21,484

Int. Cl.[2] H01C 7/00

U.S. Cl. 338—333 **6 Claims**



1. A resistance ladder having a plurality of resistance branches in an integrated circuit chip, comprising

a layer of resistance material defining a plurality of discrete linear segments and a plurality of connector tabs extending from each of the linear segments at predetermined intervals for defining each resistance branch;

wherein the improvement comprises:

the layer of resistive material further defining a number of curvilinear segments for connecting the linear segments to provide a continuous resistive material layer for defining said resistance ladder.

4,219,798

AUTOMOTIVE ON-BOARD NETWORK ELECTRICAL SYSTEM WITH WARNING MEANS TO INDICATE TROUBLE IN THE ALTERNATOR OF THE SYSTEM

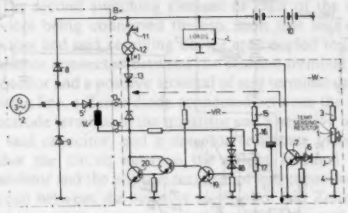
Manfred Frister, Schwieberdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 17, 1978, Ser. No. 897,036

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1977, 2718658

Int. Cl.[2] G08B 19/00

U.S. Cl. 340—52 F **5 Claims**



1. In an automotive on-board network electrical system with malfunction warning indicating having

a generator (2) having a field winding (14) and a field excitation terminal (D+) connected to the field winding;

a battery (10);

a voltage regulator (VR) connected to the generator and sensing the output voltage of the generator, and further connected to the field excitation terminal (D+) to control current flow through the field winding (14);

A charge control lamp (12) having terminals connected to the output of the generator and to the battery respectively;

and means (W) to indicate bearing trouble in the alternator and controlling said charge control lamp to provide a trouble indication including

a temperature sensitive resistor (1) located in heat transfer relation to at least one of the bearings of the generator;

and an evaluation network (3, 4, 6, 7) connected to said temperature sensitive resistor (1) and additionally to the charge control lamp (12) to cause the lamp to provide a trouble indication by lighting if the temperature of the respective bearing, and the resistance of the temperature sensitive resistor (1), changes beyond a predetermined limit, the evaluation network including a voltage divider (3, 1, 4) of which the temperature sensitive resistor (1) is a part, a switching transistor (7) connected to a junction or tap point of the voltage divider;

the switching transistor (7) being connected to a terminal of the charge control lamp to, selectively, control illumination thereof upon rise in temperature of a bearing of the generator (2) and said charge control lamp further providing an indication if the output voltage of the generator is below the voltage of the battery;

and a blocking diode (13) connected between the junction of the connection of the main current carrying path of the switching transistor (7) with a terminal of the charge control lamp (12), and the field excitation terminal (D+).

4,219,799

VEHICULAR SIGNAL APPARATUS

Harold J. Weber, 20 Whitney Dr., Sherborn, Mass. 01770

Filed Oct. 24, 1978, Ser. No. 954,178

Int. Cl.[2] G08B 3/00

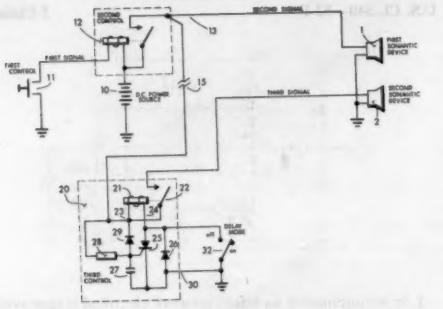
U.S. Cl. 340—52 R **13 Claims**

1. Vehicular signalling apparatus operative so as to provide at least a first signal, a second signal, and a third signal wherein said signals occur in a successive time pattern and wherein

further, said first signal and said second signal occur substantially time coincident whilst said second signal and said third signal occur with intentional time coincidence disparity, including in combination:

a. vehicular apparatus including a source of direct current energy;

b. first control means, coupled to said source of direct current energy, operative so as to therefrom issue a first signal;



c. second control means, coupled to said first control means, cooperative with said first signal so as to therefrom issue a second signal;

d. first sonantic device means coupled to said second signal;

e. third control means, coupled to said second control means, operative therewith so as to issue a third signal the effectuation of which is substantially delayed in time respective to the said second signal; and,

f. second sonantic device means coupled to said third signal.

4,219,800

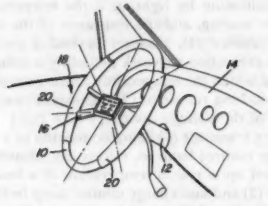
REMINDER FOR VEHICLE DRIVERS

Richard D. LeViness, 321 N. Division St., Salisbury, Md. 21801

Filed Dec. 27, 1978, Ser. No. 973,592

Int. Cl.[2] G08B *21/00*

U.S. Cl. 340—52 D **6 Claims**



1. A reminder for vehicle operators and the like having a manual control to keep their conscious mind continuously directed to the task of manipulating the manual control in a prescribed manner comprising a pressure responsive switch means associated with the manual control, and a signaling device located for easy observation by the operator, said signaling device being actuated in response to the switch means, said switch means being operative to actuate the signaling means in response to increase in gripping force exerted on the manual control by the operator, said manual control being a steering wheel, said switch means including a pair of gripping pads mounted at circumferentially spaced points on the steering wheel, each of said pads including a switch having a movable component movable to signaling device actuating position in response to increase in gripping force on a gripping pad.

4,219,801

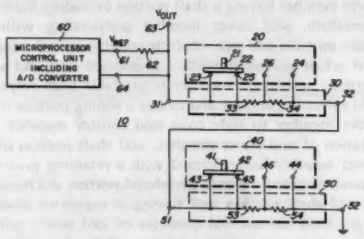
DUAL SLIDE SWITCH VOLTAGE ENCODER

Robert J. Valek, Wheaton, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 28, 1978, Ser. No. 920,050

Int. Cl.[2] H03K *13/02*

U.S. Cl. 340—347 DA **17 Claims**



1. An encoder for providing any one of a plurality of predetermined discrete analog signals, said encoder comprising:

source means providing a predetermined analog reference signal having a magnitude;

first multiposition switch means with a first manual actuator having at least three stable mechanical positions;

first circuit means associated with and coupled to said first switch means, said first circuit means having input and output terminals and providing a series of different predetermined resistances between said first input and output terminals wherein each resistance corresponds to each of said mechanical positions of said first actuator;

second multiposition switch means with a second manual actuator having at least two stable mechanical positions, said second manual actuator independently operable with respect to said first manual actuator;

second circuit means associate with and coupled to said second switch means, said second circuit means having input and output terminals and providing a series of different predetermined resistances between said second input and output terminals wherein each resistance corresponds to each of said mechanical positions of said second actuator;

said first and second circuit means coupled to each other, and at least one of said first and second switch means coupled to said source means; and

an encoder output terminal coupled to at least one of said first and second circuit means;

said predetermined resistances provided by said first and second switch and circuit means being interrelated such that a plurality of predetermined analog output signals related to said analog reference signal and having substantially equal increments in magnitude therebetween are provided at said encoder output terminal in response to the combination of each of said mechanical positions of said first manual actuator with each of said mechanical positions of said second manual actuator, whereby said first and second switch and circuit means provide an inexpensive apparatus for developing any one of a plurality of discrete analog signals at a single output terminal representative of a plurality of different logic states by utilizing a single analog reference signal,

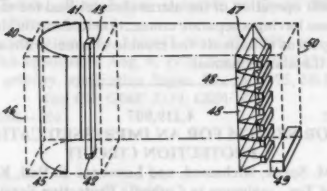
wherein each of the series of different resistances provided by the first and second circuit means have equal increments therebetween and the increment of the first series of resistances is substantially equal to the product of the increment of the second series of resistances times the number of said mechanical positions of said second switch means manual actuator.

4,219,802

SCANNING BARRIER FOR THE DISCRIMINATION AND COUNTING OF OBJECTS AND MORE SPECIFICALLY OF VEHICLES IN TRANSIT THROUGH A LAMINAR BARRAGE OF ELECTROMAGNETIC MICROWAVES

Pierluigi Ceseri, Florence, Italy, assignor to "Autostrade"-Concessioni e Costruzioni Autostrade S.p.A., Rome, Italy

Filed Jun. 18, 1976, Ser. No. 697,451
Claims priority, application Italy, Jun. 19, 1975, 50133 A/75
Int. Cl.[2] G08B *13/24;* G08G *1/01*
U.S. Cl. 340—552 9 Claims



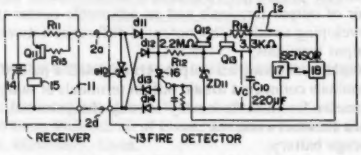
1. A scanning barrier for detecting objects in a scanned area, comprising a transmitter for transmitting across the scanned area a laminar barrage of electromagnetic microwaves having a thin width and a defined height, and a receiver for receiving said transmitted microwaves crossing the scanned area, said transmitter comprising an illuminator comprised of an oscillator for producing a wave beam operating at the millimeter wavelength range and a slit wave guide coupled to said oscillator, said slit wave guide having slits in a fan-like arrangement, whereby each of the slits emits a constant portion of the generated power of the wave beam to obtain an even wave front having a constant phase, said receiver being formed of a plurality of separate and individual vertically adjacent elemental receivers, each elemental receiver receiving a horizontal slice of the laminar barrage, each of said elemental receivers comprising a low gain horn antenna for receiving the horizontal slice of the laminar barrage, a crystal video receiver respectively coupled to each of said horn antennas and circuit means respectively coupled to each output of a respective crystal video receiver whereby each of said elemental receivers produces a direct voltage output corresponding to the interruption of the laminar barrage to that elemental receiver by an object in the area, and wherein the sensitivity of the barrier is dependent upon the aperture angle of each of said horn antennas.

4,219,803

TWO-WIRE FIRE SENSING AND RECEIVING SYSTEM

Katsutoshi Kuwabara, Yamato, and Mitsuo Horiuchi, Sagamihara, both of Japan, assignors to Hochiki Corporation, Tokyo, Japan

Filed Jun. 27, 1978, Ser. No. 919,637
Claims priority, application Japan, Jul. 4, 1977, 52-87501[U]
Int. Cl.[2] G08B *17/10;* H01H *71/74*
U.S. Cl. 340—595 8 Claims



1. A two-wire fire sensing and receiving system comprising;

a plurality of sensing devices comprising a capacitor, a fire sensor connected between the terminals of said capacitor and which is operated by discharging current of said capacitor to produce fire signals, and a terminal short-circuiting line including a switching means which is rendered conductive by the application of such fire signals;

a receiving device comprising a d-c power supply, a first switching element connected in series, in a short-circuiting trunk line connected between the positive terminal and the negative terminal of the power supply, with an alarm control device;

a two-wire circuit extending from the positive and negative terminals of said short-circuiting trunk line, said switching means comprising a second switching element the positive and negative terminals of the terminal short-circuiting line of the second switching element of each of the sensing devices being connected thereto, such that said sensing devices and said receiving device are coupled together;

a transistor connected between the positive terminal of said capacitor and a positive terminal of said terminal short-circuiting line, a Zener diode connected between the control electrode terminal of the transistor and a negative terminal of said capacitor, and a detector resistance included in either the circuit between the output terminal of said transistor and the positive terminal of said capacitor or the circuit between the negative terminal of said Zener diode and the negative terminal of said terminal short-circuiting line, wherein a voltage differential is created by an electric current flowing through said detector resistance; and

by-pass means of which one terminal is connected to the control electrode terminal of said transistor and of which the other terminal is connected to a low-potential terminal of said current detector resistance, such that the potential to said control electrode is varied in dependence on a predetermined potential difference across the two terminals of said current detector resistance;

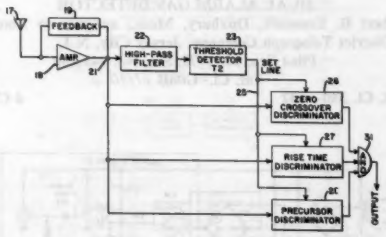
wherein the electrical current fed from the d-c power supply is controlled to be not greater than a current which is necessary for driving said fire sensors and which is determined by said current detector resistance incorporated in said by-pass means.

4,219,804

SENSOR FOR ELECTROMAGNETIC WAVES CAUSED BY NUCLEAR DETONATION

Richard C. Weischedel, Camillus, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Jul. 17, 1967, Ser. No. 660,148
Int. Cl.[2] G08B *17/12*
U.S. Cl. 340—600 7 Claims



1. A sensor for detecting electromagnetic signals from a nuclear detonation, comprising a zero crossover discriminator, a rise time discriminator, and a lightning precursor discriminator; means for intercepting electromagnetic signals and applying a signal representative of same to said discriminators; and means adapted to provide an indication of a nuclear signal whenever said zero crossover discriminator and said rise time discriminator indicate reception of a nuclear detonation electromagnetic signal and said precursor discriminator indicates

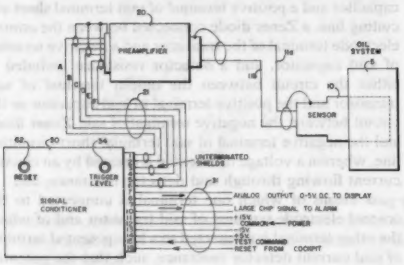
the absence of a lightning signal, wherein the improvement comprises means for rendering said discriminators normally disabled, a threshold detector adapted to provide an enabling pulse whenever a received signal reaches a predetermined amplitude level, and means for applying said enabling pulse to said discriminators for enabling same.

4,219,805

LUBRICATING OIL DEBRIS MONITORING SYSTEM

James H. Magee, and Thomas E. Tauber, both of Glenolden, Pa., assignors to Technical Development Company, Glenolden, Pa.

Filed Oct. 13, 1978, Ser. No. 950,972
Int. Cl.[2] G01R *27/02*
U.S. Cl. 340—631 **13 Claims**



1. An apparatus for monitoring the quantity of ferrous particulate debris in oil and hydraulic fluid systems comprising:

a magnetic sensor including a magnetic field to attract and capture a plurality of ferrous particles and a pulse generating means which generates a pulse to signal the capture and mass of said particles;

a preamplifier to amplify said pulses operatively connected to said sensor;

signal conditioning means to evaluate said amplified pulses and provide output signals which are a function of the mass of said particles, operatively connected to said preamplifier; and

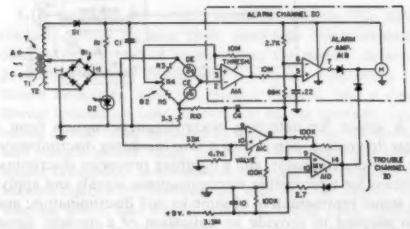
display means operatively connected to said conditioning means to provide an audio/visual output of said proportionate signals.

4,219,806

DUAL ALARM GAS DETECTOR

Robert B. Enemark, Duxbury, Mass., assignor to American District Telegraph Company, Jersey City, N.J.

Filed Sep. 15, 1978, Ser. No. 942,880
Int. Cl.[2] G08B *17/10*
U.S. Cl. 340—632 **4 Claims**



1. Apparatus for detecting an atmospheric alarm condition comprising:

a resistive element for sensing atmospheric condition;

an alarm channel responsive to the element for activating an alarm;

an electronic valve responsive to failure of the sensing element;

a trouble channel activated upon response of the valve to actuate the alarm;

a power supply; and

means for monitoring the power applied from the supply to the sensing element

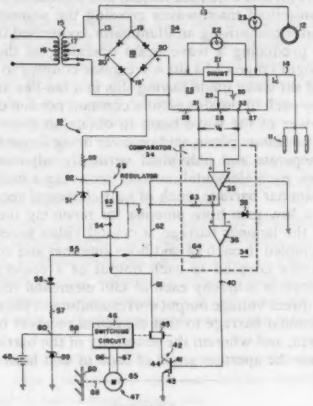
the valve being coupled both to the alarm channel and trouble channel to enable operation of the trouble channel upon failure of the sensing element and simultaneously to inhibit operation of the alarm channel, and the monitoring means having a separate connection to the trouble channel only so as to activate the trouble channel without inhibiting the alarm channel.

4,219,807

SENSOR SYSTEM FOR AN IMPRESSED CATHODIC PROTECTION CIRCUIT

Robert M. Speck, Richmond, and Lawrence E. Beil, Kingwood, both of Tex., assignors to Cathodic Protection Services, Inc., Houston, Tex.

Filed Apr. 17, 1978, Ser. No. 896,954
Int. Cl.[2] G08B *21/00*
U.S. Cl. 340—664 **3 Claims**



1. A surveillance apparatus for instantaneously sensing a cathodic protection current flowing in a cathodic protection circuit, comprising:

an energizing circuit including a regulator network connected to a primary source of energy, said network converting the receiving energy to a useful, direct-current potential for impressing a sufficient cathodic protection current to a conductor subject to corrosion;

a potentiometer connected in parallel with a branch of said cathodic protection circuit, said potentiometer having a pair of output terminals and an adjustable center tap for developing an adjustable potential difference between said output terminals;

a comparator having an output terminal and a pair of input terminals connected to said output terminals of said potentiometer for instantaneously sensing the potential difference therebetween;

a storage battery;

a switching network having a first input connected to the output of said comparator, and a second input connected to said energizing circuit and to said storage battery; and

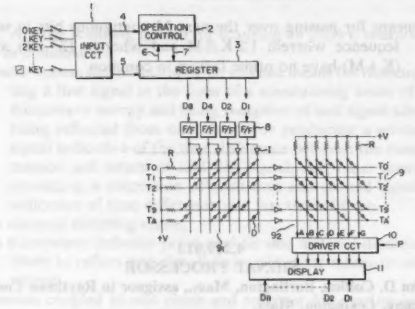
a signaling device having a pair of input terminals connected through said switching network to said energizing circuit

and to said storage battery, said signaling device becoming energized either by said energizing circuit or by said storage battery depending on the condition of said switching means, said signaling device having a non-signaling state when said potential difference is above a threshold level, and a signaling state when said potential difference drops to said threshold level.

4,219,808
NUMERICAL AND NON-NUMERICAL DISPLAY SYSTEM FOR A SMALL CALCULATOR

Ichiro Sado, Tokyo; Seiji Saito, Yokohama, and Shigeru Matsuyama, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 744,442, Nov. 23, 1976, abandoned. This application Aug. 9, 1978, Ser. No. 932,339
Claims priority, application Japan, Dec. 5, 1975, 50-145556
Int. Cl.[2] G06F *3/14*; G09F *9/32*
U.S. Cl. 340—756 **7 Claims**



1. A numerical display system for an electronic calculator comprising:

a multi-digit numerical display means having a plurality of display cells each of which includes seven segments forming the shape of the Arabic figure eight and representative of one digit;

register means for applying numerical information and non-numerical information to said multi-digit numerical display device;

input means for entering said numerical information and said non-numerical information to said register means; and

control means responsive to the output from said input means for causing said register means to store said numerical information and said non-numerical information, and for causing said display device to display said numerical and non-numerical information in such a manner that said non-numerical information is displayed between a numerator quantity and a denominator quantity, and at a desired digit position of said display device in association with said numerator and denominator quantities, said non-numerical information representation having given by at least two segments of the associated display cell.

4,219,809
COMPENSATION SCHEME FOR ELECTROCHROMIC DISPLAYS

Jack Schwarzschild; Alan E. Willis, both of Stamford, and Scott P. Wilson, Wolcott, all of Conn., assignors to Times Corporation, Waterbury, Conn.

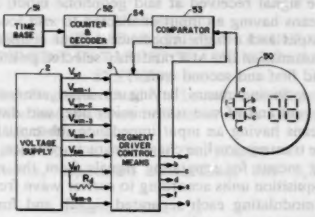
Filed Jul. 17, 1978, Ser. No. 925,580
Int. Cl.[2] G06K *15/18*
U.S. Cl. 340—785 **4 Claims**

1. An electrochromic display comprising:

a first transparent substrate with a selectively actuatable transparent electrode thereon and an electrochromic layer on said transparent electrode;

a second substrate having a conductive counterelectrode thereon;

electrolyte means sealed between the first and second substrates and in electrical contact with said counterelectrode and said electrochromic layer;



first means for selectively applying a transition write potential between said electrodes for a predetermined transition period;

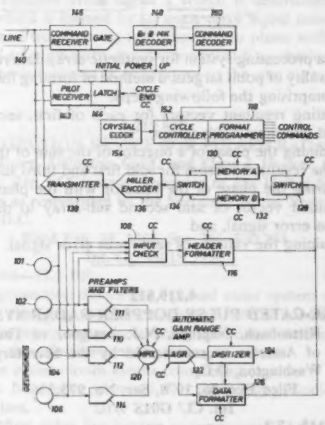
second means for selectively applying a first maintain write potential between said electrodes; and

third means responsive to the charge storage ability of said electrochromic layer with application of said first maintain write potential for selectively applying a second maintain write potential between said electrodes.

4,219,810
FREQUENCY DIVISION MULTIPLEX DIGITAL SEISMIC TELEMETRY SYSTEM

Wesley L. Joosten, El Paso, Tex., assignor to Globe Universal Sciences, Inc., El Paso, Tex.

Continuation of Ser. No. 683,414, May 5, 1976, abandoned, which is a continuation of Ser. No. 507,063, Sep. 18, 1974, abandoned. This application May 15, 1978, Ser. No. 905,945
Int. Cl.[2] G01V *1/00*
U.S. Cl. 340—853 **5 Claims**



1. A seismic data telemetry system for coupling signals from a plurality of geophones on the earth's surface to a central recording station comprising:

a single two-wire transmission line having first and second ends,

a termination resistor having a resistance substantially equal

to the transmission line characteristic impedance connected across the first end of said transmission line,

a plurality of remote data acquisition units each having: at least one geophone input adapted for connection to a geophone; a local oscillator having an input coupled to said geophone input and an output for providing a modulated radio frequency carrier wave signal, wherein the carrier wave radio frequency of each local oscillator is a preselected unique frequency and the modulation carries the signal received at said geophone input; line driving means having an input connected to said local oscillator output and a high impedance output connected to said transmission line at a randomly selected position between said first and second ends,

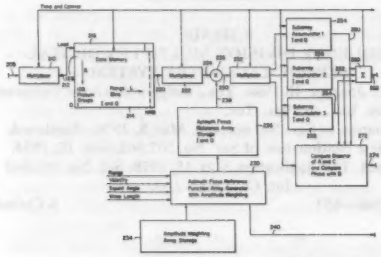
data receiving means having an input connected to said second end of said transmission line, said data receiving means having an input impedance substantially equal to the transmission line characteristic impedance, and including means for separating signals from the remote data acquisition units according to carrier wave frequency, for demodulating each separated signal, and for providing outputs to a recording station.

4,219,811

SYNTHETIC ARRAY AUTOFOCUS SYSTEM

Elvin E. Herman, Pacific Palisades, and Frederick C. Williams, Topanga, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Feb. 7, 1975, Ser. No. 548,040
Int. Cl.[2] G01S 9/02
U.S. Cl. 343—5 CM **16 Claims**



16. In a processing system for synthetic array data representing a plurality of point targets, a method of forming focus error signal comprising the following steps:

generating resultant vectors for each of first, second and third contiguous sub-arrays,

determining the phase of a bisector of the sum of the angles of the resultant vectors for said first and third sub-arrays,

comparing the phase of the bisector with the phase of the resultant vector of said second sub-array to develop a focus error signal, and

determining the validity of said focus error signal.

4,219,812

RANGE-GATED PULSE DOPPLER RADAR SYSTEM

Otto E. Rittenbach, Neptune, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 26, 1978, Ser. No. 973,356
Int. Cl.[2] G01S 9/02
U.S. Cl. 343—7.3 **7 Claims**

1. A range-gated radar system including an antenna and transmit-receive device which comprises:

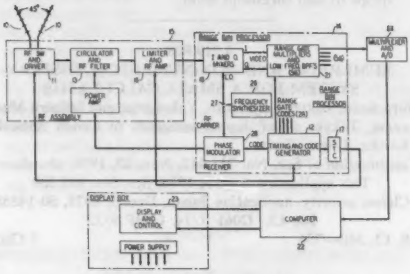
a source of r.f. energy;

a source of a coded binary signal; and

means for phase-modulating said r.f. energy source with said coded binary signal;

said coded binary signal source comprising means for generating a periodic bit sequence having 2^N-1 bits per period, where N is any integer greater than one;

means for selecting K contiguous bits from said sequence starting at some arbitrary point in the sequence;



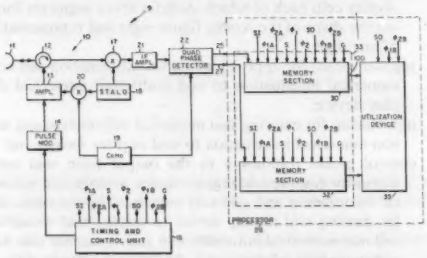
means for passing over the next M contiguous bits in said sequence where $1 \leqq K \leqq M$ and wherein (2^N-1) and $(K+M)$ have no prime factors in common.

4,219,813

SIGNAL PROCESSOR

John D. Collins, Burlington, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed May 26, 1977, Ser. No. 800,993
Int. Cl.[2] G01S 9/42
U.S. Cl. 343—7.7 **3 Claims**



1. In a radar system wherein a series of video signals are produced in response to a series of transmitted radar pulses, a signal processor, comprising:

(a) a plurality of charge transfer devices;

(b) means for coupling directly each one of the series of video signals simultaneously to each one of the plurality of charge transfer devices;

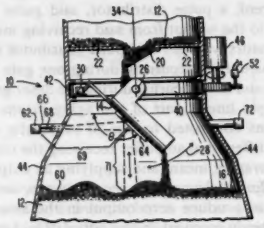
(c) means for enabling a sequence of range cell samples of each one of the video signals in the series thereof to be stored in corresponding ones of the charge transfer devices, each one of the charge transfer devices storing a set of samples corresponding to radar returns from objects at a corresponding range; and

(d) a single crystal substrate having formed thereon the plurality of charge transfer devices, coupling means and enabling means.

4,219,814
SCANNING RADAR

Henry C. Johnson, Neshanic, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 26, 1978, Ser. No. 973,453
Int. Cl.[2] G01S 9/04
U.S. Cl. 343—9 R 4 Claims



1. A radar scanning system for scanning an object, comprising in combination:

radar system means including an antenna means for transmitting a first signal in the form of a nonscanning beam of a microwave energy and being receptive of said signal after being reflected from said object for producing a second signal indicative of the time difference between the transmission and return of said first signal, said radar means producing a succession of such first and second signals indicative of time difference as a function of time;

a material directing chute;

a microwave reflector positioned on said material directing chute to reflect said signals from said radar means to said object;

means coupled to said chute and reflector for moving said chute and reflector to scan said object by said first signal in a desired pattern;

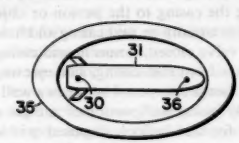
means responsive to the orientation of said reflector for producing a succession of third signals which are representative of the orientation of said reflector as a function of time; and

means responsive to said second and third signals for producing a succession of fourth signals which represent one of range and range rate of said object as a function of reflector orientation.

4,219,815
BULLET HIT INDICATOR SCORING SYSTEM

Lyle A. Fajen; Robert B. Malcolm, and Thomas W. McDonald, all of Scottsdale, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 844,685, Oct. 25, 1977, abandoned.
This application Feb. 27, 1979, Ser. No. 15,695
Int. Cl.[2] G01S 9/04, 9/44
U.S. Cl. 343—12 MD 13 Claims



1. A bullet hit indicator scoring system for use with a target comprising:

(a) a radar transmitter mounted on the target and having an antenna mounted on the target:

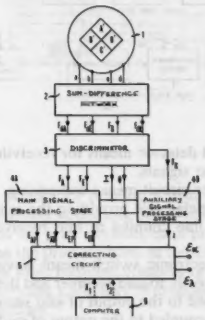
(b) a compatible radar hetrodyne type receiver mounted on the target, having an antenna mounted on the target in spaced relation from the transmitter antenna and including means providing an output only in response to positive Doppler signals; and

(c) means connected to said transmitter and said receiver for causing said transmitter to transmit periodic pulses of energy and for periodically activating said receiver so as to produce a generally ellipsoidally shaped, shell-like sensitive volume surrounding the target and spaced therefrom in which the radar will sense bullets.

4,219,816
METHOD OF AND APPARATUS FOR ANGULAR MEASUREMENT IN TARGET TRACKING RADAR SYSTEMS

Albert Schenkel, Regensdorf, and Urs Leuenberger, Bonstetten, both of Switzerland, assignors to Siemens-Albis Aktiengesellschaft, Zürich, Switzerland

Filed Dec. 26, 1978, Ser. No. 972,886
Claims priority, application Switzerland, Feb. 9, 1978, 1445/78
Int. Cl.[2] G01S 9/22
U.S. Cl. 343—16 M 5 Claims



5. A radar tracking or homing unit comprising angular measurement means containing at least three primary feeds, a sum-difference network, and signal processing stage for producing a function error signal z which is determined by a quotient which is formed by an angle error signal component E_{KP} obtained from a cross-term function in phase with a sum signal, and an angle error signal component E_{KQ} obtained from the cross-term function in quadrature to the sum signal.

4,219,817
PROTECTION DEVICE FOR PULSED RADAR

Loyd C. Moore, Arlington, Calif., and Klaus J. Hecker, Oberursel, Fed. Rep. of Germany, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 18, 1966, Ser. No. 530,254
Int. Cl.[3] G01S 7/28
U.S. Cl. 343—17.1 PF 1 Claim

1. In a protection device for a pulsed radar system wherein randomly changing the pulse repetition rate is accomplished while maintaining the pulse spacing between a maximum and minimum, the combination comprising:

(a) jitter coder circuit means comprising

(1) a first input terminal for receiving periodic clock pulses,

(2) a first delay line having an input coupled to said first input terminal and having an output,

(3) a first electronic switch having a first input coupled to the output of said first delay line, a second input coupled to said first input terminal, a third input and an output,

(b) jitter code generating means comprising

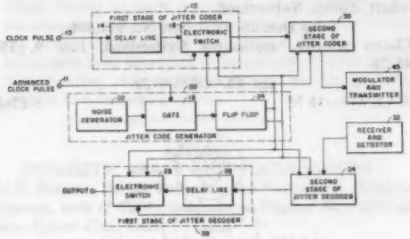
(1) a noise generator for generating noise signals,

(2) a second input terminal for receiving periodic clock pulses occurring intermediate the clock pulses received at said first input terminal,

(3) a gate circuit coupled to said noise generator and to said second input terminal and being responsive to pass noise generated signals in response to received clock pulses,

(4) a flip flop multivibrator circuit coupled to said gate circuit and being responsive to noise signals of a predetermined amplitude to change its state of operation and having an output coupled to said third input of said first electronic switch,

(c) modulator and transmitter means coupled to the output of said first electronic switch for transmitting pulsed radar signals,



(d) receiver and detector means for receiving and detecting reflected radar signals,

(e) jitter decoder circuit means comprising

(1) a second delay line providing the same delay as said first delay line coupled to said receiver and detector means,

(2) second electronic switch means having a first input coupled directly to said receiver and detector, a second input coupled to the output of said second delay line, a third input coupled to the output of said flip flop multivibrator and being responsive to the output signals of said flip flop multivibrator for altering the timing of the received reflected radar signals in the same manner as the transmitted signal to produce an output signal having a time delay proportional to the range of the reflected radar signal.

4,219,818

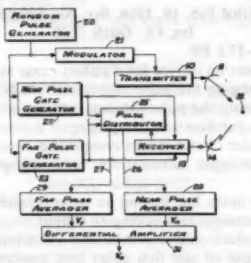
RADAR SYSTEM

George F. Mansur, Jr., Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 5, 1956, Ser. No. 626,454

Int. Cl.[2] G01S *9/02*

U.S. Cl. 343—17.1 R **3 Claims**



1. A radar system comprising means for radiating pulse-modulated electromagnetic energy, means for receiving said energy after reflection from a target, means for generating pulses, said generated pulses being applied to said radiating means for control of the radiated energy therefrom, near and far pulse gate generators each producing a pulse during a discrete time interval between successive pulses of said radiated energy and during which reflected energy may be received, said time intervals not exceeding the time corresponding to the maximum range of said radar system, said pulse generating means being coupled to said gate generators for triggering thereof, a pulse distributor, said pulse distributor being coupled to the output from said receiving means and to said gate generators whereby said pulse distributor applies said receiving means output occurring during one gate interval to one output line and that occuring during the other gate interval to another output line, a pair of averaging means, each said averaging means connected to one of said pulse distributor output lines, a differential amplifier receiving the outputs from each of said averaging means and supplying an output proportional to the differential amplitude therebetween, said amplifier being adapted to produce zero output in the absence of reflected energy being received during either of said near and far gate intervals and in the presence of reflected energy during one of said gate intervals being adapted to produce an output having a finite value with a polarity indicative of which of the two said gate intervals is coincident with said reflected energy reception.

4,219,819

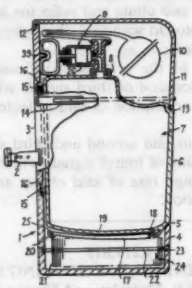
SAFETY DEVICES

Rasik M. Patel, 60 Sunnymead Rd., Kingsbury, London NW9 8BX, England

Filed Oct. 11, 1978, Ser. No. 950,437

Int. Cl.[2] H01Q *1/28*; B64B *1/52*

U.S. Cl. 343—18 B **9 Claims**

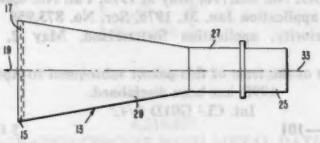


1. A device for aiding in the location of a person or object, comprising a balloon, a container for a pressurised gas lighter than air, a normally-closed valve connecting said balloon to said container, a casing in which said balloon, said container and said valve are disposed, means carried by said casing, for use in attaching the casing to the person or object, releasable means mounted externally on said casing and holding both said casing and said valve closed, means in said casing, for ejecting said gas container from said casing, said ejecting means comprising resilient means interposed between a wall of said casing and an oppositely facing wall portion of said gas container, and a tethering line for said balloon disposed within said casing, whereby upon operation of the releasable means, the casing is opened to permit escape of the balloon and gas container therefrom, the valve is opened to release the gas into the balloon and the gas container is urged away from said casing and the inflated balloon with the gas container connected thereto can rise into the air to a height determined by the length of the tethering line to give an indication of the position of the person or object.

4,219,820
COUPLING COMPENSATION DEVICE FOR CIRCULARLY POLARIZED HORN ANTENNA ARRAY

Timothy A. Crail, Culver City, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 26, 1978, Ser. No. 973,060
Int. Cl.[2] H01Q 15/24
U.S. Cl. 343—756 7 Claims



1. In a microwave antenna array including a plurality of circularly polarized antenna horns and in which mutual coupling significantly degrades the intrinsic polarization purity of the horns, a microwave device comprising:

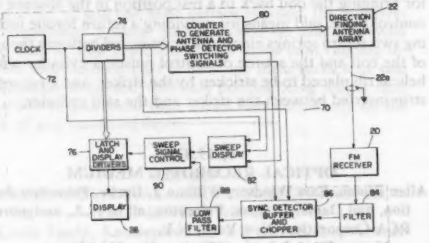
a planar substrate disposed at the output end of said horns orthogonal to the direction of propagation from said horns; and

conductive element means disposed on each of said planar substrates for providing coupling compensation between said horns to improve circular polarization purity of said antenna array, said conductive element means including a pair of spaced and diametrically opposed wedge-shaped elements having length and width dimensions and relatively thin depth dimension, the apex of each of said pair of elements being disposed toward each other.

4,219,821
AUTOMATIC DIRECTION FINDING SYSTEM

Harold N. Selim, Wichita, Kans., assignor to Regency Electronics, Inc., Indianapolis, Ind.

Filed Sep. 7, 1978, Ser. No. 940,254
Int. Cl.[2] G01S 3/20
U.S. Cl. 343—113 R 105 Claims



1. In apparatus for use in an automatic direction finding system the combination comprising:

a. indicator means suitable for display of directional information of a received radio frequency signal;

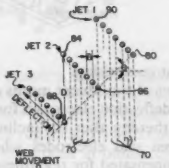
b. direction determining means connected to said indicator means for responding to a received signal of a sufficient level and for causing the indicator means to indicate the direction of arrival of the received radio frequency signal; and

c. sweep means connected to said indicator means for causing said indicator means to sequentially display directions independently of any direction determined by said direction determining means, the sequential display being at a visually perceivable rate.

4,219,822
SKEWED INK JET PRINTER WITH OVERLAPPING PRINT LINES

Suresh C. Paranjpe, Xenia, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Aug. 17, 1978, Ser. No. 934,351
Int. Cl.[2] G01D 15/18
U.S. Cl. 346—75 6 Claims



1. An ink jet printer for printing a print image on a print medium by selectively depositing ink drops at a plurality of print positions on the print medium, each print position defining a print line on the print medium, in the direction of relative movement of the print medium, comprising:

means for generating a plurality of drop jets directed toward the print medium,

means for effectuating relative movement between said print medium and said means for generating a plurality of drop jets, thereby defining print lines which extend in the direction of relative movement of said print medium, and

means for selectively deflecting drops from each drop jet to print positions in an associated group of the plurality of print positions, at least two of the print positions in each group of print positions defining print lines which substantially overlap with print lines defined by print positions in adjacent groups of print positions, such that the pattern of drops deposited on the overlapping print lines by each jet is substantially the same as the pattern of drops deposited on the overlapping print lines by adjacent jets.

4,219,823
IMAGE INCLINATION CONTROL FOR BI-DIRECTIONAL INK JET PRINTERS

Rex D. Fathergill, Frankfort, and Alvin L. Wittwer, Paris, both of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 17, 1979, Ser. No. 75,911
Int. Cl.[3] G01D 15/18
U.S. Cl. 346—75 14 Claims

1. In an ink jet printer comprising:

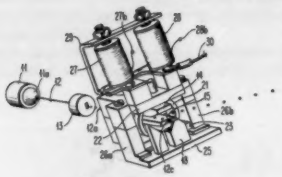
a nozzle for emitting a stream of ink drops at a predetermined velocity in a predetermined path;

a charging electrode for charging the ink drops in accordance with the signals to be recorded;

first and second spaced apart deflection electrodes on opposite sides of the path of the stream of ink drops, and power supply means for forming an electric field intermediate said electrodes for deflecting the ink drops passing between said electrodes in accordance with the amplitudes of the individual charges on the ink drops;

a record receiving means for forming images indicative of the amplitude of the signals carried by the deflected ink drops;

carrier means mounting said nozzle, charging electrode and deflection electrodes and drive means for effecting relative movement between said record receiving medium and said carrier resulting in, if uncompensated for, an inclination of images formed by said ink drops;



the improvement comprising:

electromechanical transducer means connected to at least one of said deflection electrodes for altering its physical position to thereby alter the inclination of the electric field between said electrodes whereby character tilt may be compensated for regardless of the direction of relative movement between said carrier and said record receiving media.

4,219,824

THERMAL RECORDING APPARATUS

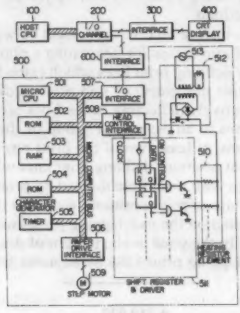
Nobuteru Asai, Hitachi, Japan, assignor to Hitachi, Ltd., Japan

Filed Jan. 17, 1979, Ser. No. 4,224

Claims priority, application Japan, Jan. 18, 1978, 53-3400

Int. Cl.[2] G01D *15/10*

U.S. Cl. 346—76 PH **2 Claims**



1. A thermal recording apparatus having a plurality of heating resistor elements and a control circuit for controlling the power supplied to said elements, wherein those of said elements which correspond to the black dots of the information to be recorded are selectively heated by supplying currents to them, said control circuit comprising:

a quasi-stabilized power source connected with said heating resistor elements;

a power supply time period setting means for previously setting the power supply time period corresponding to the number of the simultaneously energized heating resistor elements in accordance with the load characteristics of said power source;

a counting means for counting the number of the heating resistor elements energized simultaneously in accordance with the recording information; and

a power supply time control means for controlling the time period for power supply to said heating resistor elements in response to the output of said counting means in accordance with said time period set by said power supply time setting means.

4,219,825

ELECTRIC ACTUATING DEVICE

Marc Heyraud, S-sur-Coffrane, and André Martin, La-Chaux-de-Fonds, both of Switzerland, assignors to Portescap, La-Chaux-de-Fonds, Switzerland

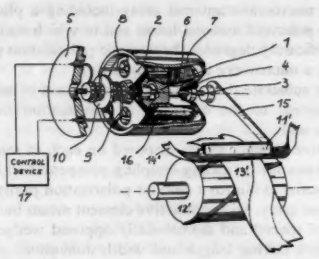
Division of Ser. No. 682,796, May 3, 1976, Pat. No. 4,084,502. This application Jan. 31, 1978, Ser. No. 873,958

Claims priority, application Switzerland, May 2, 1975, 5691/75

The portion of the term of this patent subsequent to Apr. 18, 1995, has been disclaimed.

Int. Cl.[2] G01D *9/42*

U.S. Cl. 346—101 **5 Claims**



1. A printing device for a chronocomparator, comprising a striker, an ironless coil mounted for rotation in the air gap of a magnetic circuit and electrically connected to a source of control pulses, said coil being part of a cup shaped rotor and comprising a self supporting cylindrical winding fixed at its one end onto a supporting disk, said magnetic circuit comprising a permanent magnet placed inside the coil and a soft iron cylindric outer part surrounding the coil, the poles of the magnetic circuit and the coil being arranged for producing a torque upon occurrence of a control pulse, means for connecting the striker to the coil, means for providing a return torque for bringing the coil back to a rest position in the absence of a control pulse, said means for providing a return torque including two return springs electrically connected between the ends of the coil and the source of control pulses, a cylinder with a helical rib placed to be stricken by the striker, and a recording strip inserted between the striker and the said cylinder.

4,219,826

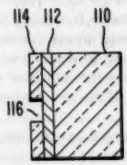
OPTICAL RECORDING MEDIUM

Allen Bloom, East Windsor; William J. Burke, Princeton Junction, and Daniel L. Ross, Princeton, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jul. 10, 1978, Ser. No. 923,350

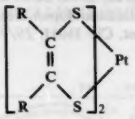
Int. Cl.[2] G01D *15/34*

U.S. Cl. 346—135.1 **11 Claims**



1. In an ablative optical recording medium, for use with a recording laser providing light of a given frequency, which

comprises a light reflecting layer coated with a smooth, specular, amorphous, optical quality light absorbing layer, the improvement which comprises employing as the light absorbing layer a Pt bis(dithio-α-diketone) complex having the formula



where R is a phenyl or a substituted phenyl group.

4,219,827

INTEGRATED CIRCUIT WITH METAL PATH FOR REDUCING PARASITIC EFFECTS

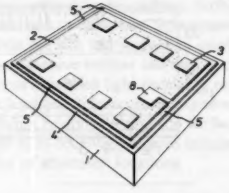
Reinhold Kaiser, Heilbronn, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 763,690, Jan. 28, 1977, abandoned. This application Jan. 15, 1979, Ser. No. 3,645

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1976, 2603747

Int. Cl.² H01L *23/48, 29/44, 29/52*

U.S. Cl. 357—68 **25 Claims**



1. In an integrated circuit arrangement including a semiconductor body having a plurality of electrically separated components formed therein adjacent one main surface and an insulating layer on said one main surface and covering said components except for openings for connections to same while leaving a part of said one main surface exposed, the improvement comprising: a metal path disposed on said one main surface with at least a portion of said metal path running directly on said exposed part of said one main surface of said semiconductor body and with said portion being longer than any portion of said metal path which runs exclusively on the surface of said insulating layer.

4,219,828

MULTIDRAIN METAL-OXIDE-SEMICONDUCTOR FIELD-EFFECT DEVICE

Jean-Louis Lardy, Lotissement les Iris no. 23, Le Versoud-Domene, France (38420), and Jacques Majos, 4, Rue du Dauphine, Lannion, France (22300)

Filed Dec. 4, 1978, Ser. No. 966,502

Claims priority, application France, Dec. 6, 1977, 77 36720

Int. Cl.² H01L *29/80*

U.S. Cl. 357—22 **6 Claims**

1. A multidrain MOS field-effect device comprising:

a semiconductor substrate of a determined conductivity type having a major face defining a first implantation plane;

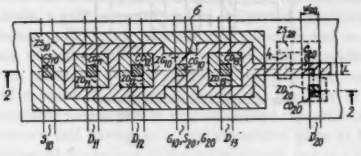
a source region included in said first implantation plane and being of the opposite conductivity type to said semiconductor substrate;

a plurality of separated drain regions included in said first implantation plane and being of said opposite conductivity type;

a single channel region included in said semiconductor substrate of said determined conductivity type, entirely surrounding each of said drain regions and being surrounded by said source region;

a thin insulating layer above at least of said channel region; and

a second implantation layer composed of polycristalline silicon and defining a single gate region which is above said thin insulating layer and said single channel region;



said source region, said plurality of drain regions and said gate region forming a multidrain transistor which has its gate region entirely surrounding over said drain regions and being surrounded over said source region and which comprises a pluraltiy of separated drain electrodes in ohmic contact with said drain regions respectively.

4,219,829

FIELD EFFECT TRANSISTOR HAVING A SURFACE CHANNEL AND ITS METHOD OF OPERATION

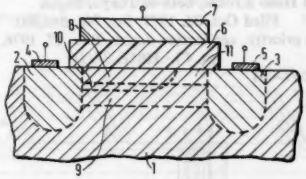
Gerhard Dorda, Munich, and Ignaz Eisele, Ottobrunn, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 4, 1977, Ser. No. 793,714

Claims priority, application Fed. Rep. of Germany, May 4, 1976, 2619663

Int. Cl.² H01L *29/72*

U.S. Cl. 357—23 **17 Claims**



1. A field effect transistor, comprising:

a semiconductor substrate of a first conductivity type;

a source zone and a drain zone each of a second conductivity type spaced apart in said substrate;

a surface channel of the second conductivity type adjoining the surface of said substrate in an area between said source and drain zones;

a gate electrode carried over said surface channel;

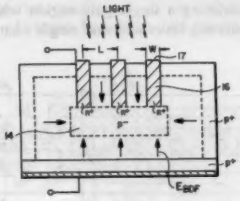
a surface depletion zone; and

a second channel in said surface depletion zone below said surface channel and extending between and connecting said source and drain zones below the surface of said substrate, said second channel including dopant particles having an energy level in the forbidden band of the semiconductor substrate which, at an operating temperature T, lies at a distance of more than $\frac{1}{4}$ kT from the conduction band edge and valance band edge of said semiconductor substrate, where k is the Boltzmann constant, and whereat, by an electric field induced ionization, an additional conductivity occurs which causes a negative differential resistance.

4,219,830
SEMICONDUCTOR SOLAR CELL

James F. Gibbons, 320 Tennyson Ave., Palo Alto, Calif. 94301

Filed Jun. 19, 1978, Ser. No. 916,833
Int. Cl.² H01L 27/14
U.S. Cl. 357—30 7 Claims

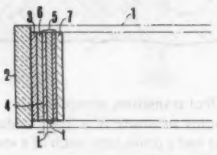


1. A solar cell formed of a body of semiconductor material of one conductivity type including an active region where carriers are generated by solar energy which impinges into and penetrates the cell, said active region having a graded impurity concentration extending at least from the surface where the solar energy impinges towards the center of said body whereby to transport generated minority carriers from the surface towards the center of the body, a plurality of spaced regions of opposite conductivity type having a high impurity concentration extending into the body to form an interior p-n collecting junction which collects the minority carriers transported toward the center of the body by the electric field and provides a low resistance path to the surface, and means of forming ohmic contact to said spaced regions of opposite conductivity type and to said body of one conductivity type.

4,219,831
TARGETS FOR USE IN PHOTOCONDUCTIVE IMAGE PICKUP TUBES

Yasuhiko Nonaka, Mobara; Naohiro Goto, Machida, and Keiichi Shidara, Tama, all of Japan, assignors to Hitachi, Ltd. and Nippon Hoso Kyokai, both of Tokyo, Japan

Filed Oct. 31, 1977, Ser. No. 846,881
Claims priority, application Japan, Nov. 17, 1976, 51-137293
Int. Cl.² H01L 27/14
U.S. Cl. 357—31 4 Claims

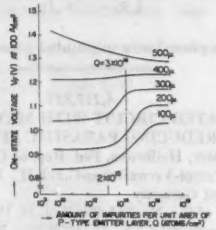


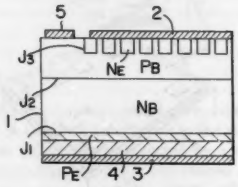
1. In a target for use in a photoconductive image pickup tube of the type comprising a transparent substrate, an N-type transparent conductive film deposited on said substrate, a P-type photoconductive film deposited on said N-type transparent conductive film, and a heterojunction formed at the interface between said N-type transparent conductive film and said P-type photoconductive film, said P-type photoconductive film containing selenium, tellurium and arsenic, said selenium and arsenic being distributed continuously from said heterojunction throughout the thickness of said P-type photoconductive film and the distribution of said tellurium being spaced from said heterojunction and localized in the vicinity of said heterojunction, the improvement wherein the total amount of arsenic contained in said P-type photoconductive film ranges from 2.5 to 6% by weight for producing a dark current between 0.2 to 0.4 nA.

4,219,832
THYRISTOR HAVING LOW ON-STATE VOLTAGE WITH LOW AREAL DOPING EMITTER REGION

Masayoshi Naito; Takahiro Nagano, and Takuzo Ogawa, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 20, 1976, Ser. No. 716,280
Claims priority, application Japan, Sep. 3, 1975, 50-105989
Int. Cl.² H01L 29/74
U.S. Cl. 357—38 11 Claims





1. A thyristor comprising:

a semiconductor substrate consisting of a first semiconductor layer of one conductivity type, a second semiconductor layer of the other conductivity type contiguous to said first semiconductor layer and defining a first PN junction between it and said first semiconductor layer, a third semiconductor layer of said one conductivity type contiguous to said second semiconductor layer and defining a second PN junction between it and said second semiconductor layer, and a fourth semiconductor layer of said the other conductivity type contiguous to said third semiconductor layer and defining a third PN junction between it and said third semiconductor layer, the regions of said second and third semiconductor layers having a higher resistivity than those of said first and fourth semiconductor layers, the sum of the thicknesses of said second and third semiconductor layers in a direction from said first layer toward said fourth layer being less than 400μ, the amount of impurities per unit area of said first semiconductor layer being less than that of said fourth semiconductor layer and selected to be less than 2×10^{13} atoms/cm^2 but more than a minimum required for the thyristor operation;

a first main electrode connected electrically to the surface of said first semiconductor layer;

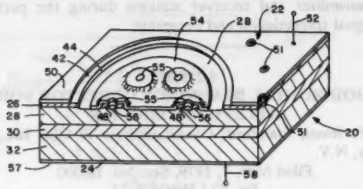
a second main electrode in ohmic contact with the surface of said fourth semiconductor layer; and

the regions of said semiconductor substrate between said first and second main electrodes being adapted to be triggered to switchover from a non-conductive state to a conductive state.

4,219,833
MULTIGATE LIGHT FIRED THYRISTOR AND METHOD

Victor A. K. Temple, Clifton Park, N.Y., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed May 22, 1978, Ser. No. 907,931
Int. Cl.[2] H01L *29/74*
U.S. Cl. 357—38 18 Claims

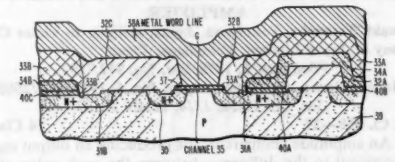


12. A light-fired thyristor comprising: a semiconductor body having at least four zones of alternate conductivity type and having a top surface, a first said zone extending to said top surface, a second said zone adjacent said first zone forming a base, said first zone including a first emitter, an emitter electrode on said top surface in contact with said first emitter, said first zone further including at least one light-responsive emitter extending to said top surface and spaced apart from said first emitter, said base extending to said top surface between said first emitter and said at least one light-responsive emitter, a control electrode on said top surface in contact with said at least one light-responsive emitter and also in contact with said base, a plurality of separated light-receiving regions on said top surface, said at least one light-responsive emitter encompassing said light-receiving regions on said top surface whereby light admitted to said light-receiving regions initiates thyristor turn-on at a plurality of separated locations.

4,219,834
ONE-DEVICE MONOLITHIC RANDOM ACCESS MEMORY AND METHOD OF FABRICATING SAME

Ronald P. Esch, San Jose, Calif.; Robert M. Folsom, Reston; Cheng-Yih Liu, Woodbridge, both of Va.; Vincent L. Rideout, Mohegan Lake, N.Y.; Donald A. Soderman, Vienna, and G. Thomas Wenning, Manassas, both of Va., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 11, 1977, Ser. No. 850,762
Int. Cl.[2] H01L *27/02*
U.S. Cl. 357—41 3 Claims



1. In a read/write monolithic memory having n×m like memory cells, said memory cells being arranged in n columns and m rows, n word lines respectively connected to the m memory cells of a discrete one of said n columns, m bit lines respectively connected to the n memory cells of a discrete one of said m rows, said memory comprising:

(a) a substrate of semiconductor material of a first conductivity type having at least one planar surface;

(b) m diffused bit lines of a second conductivity type respectively lying on and extending into said planar surface of said substrate, said m diffused bit lines extending in a row direction, said m diffused bit lines being uniformly spaced one from another on said planar surface of said substrate;

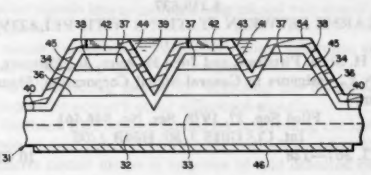
(c) m/2 doped polysilicon reference planes, each of said planes extending in a row direction between discrete first and second ones of said m diffused bit lines, each said m/2 doped polysilicon planes being generally inverted u-shaped in cross section and being separated from the surface of said substrate by an oxide layer of non-uniform thickness;

(d) n×m like memory cells, each said memory cell including a drain, a gate, a source and an integrated capacitor, said memory cells being arranged in n columns and m rows, each of said m diffused bit lines integrally providing the drain electrode of its n associated memory cells, each of said n word lines being connected to the gate of its m associated memory cells, said integrated capacitor of each memory cell having as a first capacitive plate at least a portion of the source of the memory cell, and as a second capacitive plate a portion of one of said m/2 reference planes, said portion of the reference plane overlying and being dielectrically spaced from the first plate by said oxide layer, whereby each of said m/2 doped polysilicon reference planes provides the second plate of the integrated capacitors of the memory cells connected to the two diffused bit lines adjacently spaced thereto.

4,219,835
VMOS MESA STRUCTURE AND MANUFACTURING PROCESS

Paul G. G. van Loon; Anthony S. Altiery, and Steeve T. S. Kay, all of San Jose, Calif., assignors to Siliconix, Inc., Santa Clara, Calif.

Filed Feb. 17, 1978, Ser. No. 878,685
Int. Cl.[2] H01L *29/06*
U.S. Cl. 357—55 10 Claims

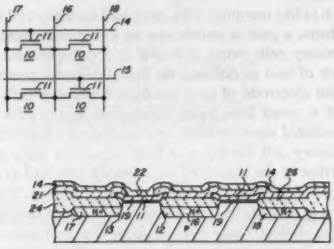


1. A V-groove metal oxide semiconductor field effect transistor comprising a body of semiconductor material including a substrate of one conductivity type, a first region of opposite conductivity type forming a first planar rectifying junction with said substrate, a second region of said one conductivity type forming a second planar junction with the first region, a V-groove in said body extending through said first and second junctions, an insulating layer formed on the walls of said groove and a conductive layer formed on said insulating layer at least adjacent the inclined edges of said first region to form a gate electrode, a groove surrounding said V-groove to form a mesa with side walls, said first and second junctions extending to said side walls, an insulating layer disposed on the surface of said device and on the side walls, and a metal layer disposed on said insulating layer to form a field electrode, a source-body electrode extending through said second region and contacting said first and second regions adjacent said groove, and a metal drain electrode contacting said substrate.

4,219,836
CONTACT PROGRAMMABLE DOUBLE LEVEL POLYSILICON MOS READ ONLY MEMORY

David J. McElroy, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 18, 1978, Ser. No. 907,235
Int. Cl.[2] H01L 29/02
U.S. Cl. 357—55 10 Claims

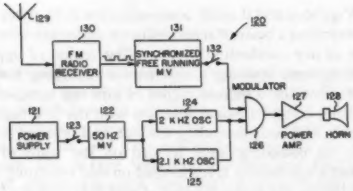


1. A read only memory device comprising an array of rows and columns of field effect transistors at a face of a semiconductor body, each transistor providing a memory cell and having a source-to-drain path and a gate with thin gate insulator between the gate of every transistor and its underlying source-to-drain path, a plurality of generally parallel column lines formed by elongated heavily-doped regions in the face creating the ends of the source-to-drain paths, a plurality of generally parallel row lines normal to the column lines formed by elongated conductive strips each overlying the gates of a plurality of the transistors in a row but not forming such gates, and programming apertures formed in an insulting layer between the conductive strips and the face to make electrical contact between the strips and selected ones of the gates but not all of said gates, the apertures directly overlying the gates and source-to-drain paths, the selected ones of the gates to which electrical contact is made functioning as gates of active transistors and the remaining gates not contacted being nonfunctional.

4,219,837
ALARMS BETWEEN STATIONS WITH RELATIVE MOTION

Mark H. Sluis, Pittsford, and John H. Auer, Jr., Fairport, both of N.Y., assignors to General Signal Corporation, Stamford, Conn.

Filed Sep. 27, 1978, Ser. No. 946,461
Int. Cl.[2] G01S 3/80; H04B 1/00
U.S. Cl. 367—128 10 Claims



1. A signalling system between a transmitter station and a receiver station either of which may have motion relative to the other and comprising in combination:

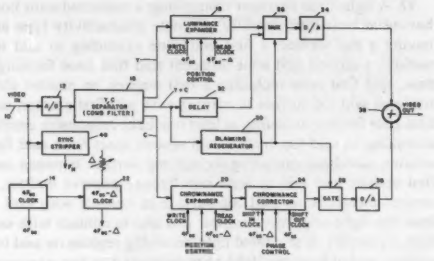
(a) controlled means for selectively generating frequency modulated and rate coded sonic signal, and for transmitting said sonic signal alternatively at first and second frequencies at a fixed rate per unit time, from the transmitter station for transmission toward the receiver station; and

(b) signal processing means at the receiver station including filter means for receiving and processing the received signal and rejecting signals below and above first and second fixed frequencies, respectively, and which, in turn, are below and above said first and second frequencies, respectively, and for producing a modified signal indicative of selected physical relationships existing between the transmitter and receiver stations during the period of signal transmission and reception.

4,219,838
HORIZONTAL BLANKING CORRECTOR FOR TELEVISION SIGNALS

John P. Rossi, Stamford, Conn., assignor to CBS Inc., New York, N.Y.

Filed Mar. 7, 1979, Ser. No. 18,000
Int. Cl.[2] H04N 9/12
U.S. Cl. 358—21 R 18 Claims



1. Apparatus for correcting for excessive horizontal blanking of color television signals, said apparatus comprising:

means for expanding by the same amount the luminance and chrominance components of an input television signal;

means for re-positioning the expanded luminance component and the expanded chrominance component with respect to a reference sync and burst;

means for correcting the error in the color subcarrier of the expanded chrominance component caused by expansion and/or repositioning; and

means for recombining the re-positioned expanded luminance and corrected chrominance components to produce a horizontally expanded composite color television signal.

4,219,839
AMPLITUDE COMPARATOR WITH A DIFFERENTIAL AMPLIFIER

Yasuaki Watanabe, Yokohama, Japan, assignor to Victor Company of Japan Limited, Yokohama, Japan

Filed Jun. 5, 1978, Ser. No. 912,715
Claims priority, application Japan, Jun. 6, 1977, 52/72585[U]
Int. Cl.[2] H03K 1/14; H04N 9/537
U.S. Cl. 358—27 16 Claims

1. An amplitude comparator for producing an output signal proportional to the difference between the peak value of an input signal and a predetermined voltage only when the peak to peak value of the input signal is over a predetermined voltage, comprising:

a differential amplifier including first and second transistors having emitters connected to each other, and an impedance element connecting the emitters to ground, said first transistor having a collector connected to a power supply terminal;

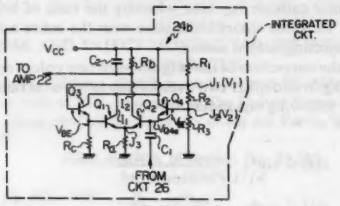
means for providing first and second predetermined voltages;

an emitter follower circuit including a third transistor having a base supplied with said first predetermined voltage,

and a collector connected to said power supply terminal, said third transistor having an emitter connected to the base of said first transistor;

a fourth transistor having a base supplied with said second predetermined voltage, said fourth transistor having an emitter connected to a base of said second transistor, said fourth transistor having a collector connected to said power supply terminal;

a series capacitor connected to the base of said second transistor for coupling the input signal to the base of said second transistor;



a load resistor connected to the collector of said second transistor, an output signal being derived across the load resistor; and

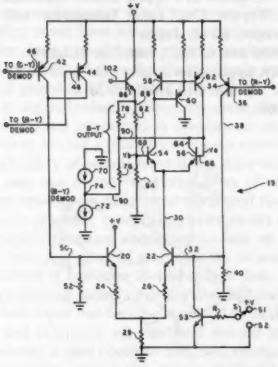
said first and second predetermined voltages being selected so that when the peak to peak value of said input signal is below a predetermined value said second transistor becomes nonconductive and said first transistor becomes conductive.

4,219,840

COLOR CORRECTOR

Gopal Srivastava, Mt. Prospect, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Dec. 18, 1978, Ser. No. 970,700
Int. Cl.[2] H04N 9/535
U.S. Cl. 358—28 **21 Claims**



1. In a television receiver adapted to receive chroma signals for demodulation thereof by a (B—Y) demodulator, an (R—Y) demodulator, and means for generating a (G—Y) demodulated signal, a color corrector for automatically correcting selected chroma signals so that their effective phase is more nearly along a fleshtone axis, comprising:

means for generating a control signal in response to demodulator outputs indicative of reception of chroma signals in a selected phase range encompassing the fleshtone axis; and

means coupled to the (B—Y) demodulator and responsive to the control signal for modifying the gain of the (B—Y) demodulator such that the output thereof is reduced by a predetermined factor, and for adding a predetermined negative (B—Y) component to the output of the (B—Y) demodulator, the amount of said component being selected such that demodulated chroma signals occurring with said range encompassing the fleshtone axis are offset toward the fleshtone axis;

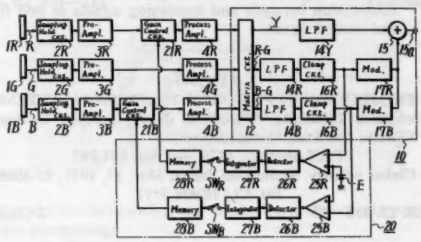
whereby fleshtone chroma signals which otherwise appear too blue or too green are given a more natural color as a result of the reduced amplitude of their (B—Y) component, and the addition of said negative (B—Y) component causes the resultant color correction to be centered about the fleshtone axis.

4,219,841

WHITE BALANCE CONTROL CIRCUIT

Toshimichi Nishimura, Sagamihara; Seisuke Yamanaka, Mitaka, and Masaru Shimada, Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 5, 1979, Ser. No. 17,551
Claims priority, application Japan, Mar. 7, 1978, 53-25643
Int. Cl.[2] H04N 9/535
U.S. Cl. 358—29 **5 Claims**



1. A white balance control system for an encoded composite color television signal comprising:

(a) means for generating three primary color signals of green, blue and red;

(b) matrix circuit means for converting said three primary color signals into a luminance signal and two mixed color signals;

(c) means for deriving two primary color difference signals out of said two mixed color signals;

(d) level detecting means for detecting the levels of said respective primary color difference signals;

(e) feedback gain control means for controlling the levels of two of said three primary color signals supplied to said matrix circuit means in response to said detected outputs of said level detecting means;

(f) modulating means for modulating sub-carriers with said mixed color signals for generating a chrominance signal; and

(g) mixing means for mixing said luminance signal and said chrominance signal for generating the encoded composite color television signal.

4,219,842

VIDEO SIGNAL COMBINER HAVING A COMMON PHASE RESPONSE AND INDEPENDENT AMPLITUDE RESPONSE

William G. Miller, Fort Wayne, Ind., assignor to The Magnavox Company, Fort Wayne, Ind.

Filed Aug. 24, 1978, Ser. No. 936,446
Int. Cl.[2] H04N 9/535
U.S. Cl. 358—31 **4 Claims**

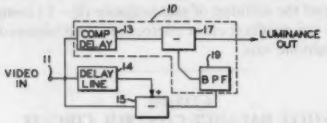
1. A circuit for filtering a first signal and combining said signal with a second unfiltered signal comprising:

(a) a first terminal for receiving said unfiltered signal;

(b) a transistor amplifier having a base terminal, a first emitter terminal connected to one end of an emitter resistor, a collector terminal connected to one end of a collector resistor, the remaining ends of said resistors being adapted to receive a d.c. voltage;

(c) a coupling resistor for connecting said first terminal to said base terminal;

(d) a resistor for connecting said first terminal to said emitter terminal;



(e) a two-section bandpass filter connected to said transistor amplifier for receiving said first signal and supplying a filtered signal to said transistor base terminal, the phase of the unfiltered signal being altered by one section of said two-section bandpass filter, whereby said transistor amplifier will amplify the combination of said filtered and said unfiltered signal and maintaining the same relative phase relationship between said combining signals as said first and second signals.

4,219,843

PROJECTION TYPE COLOR TELEVISION SYSTEM

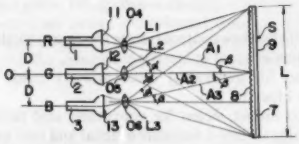
Yoshimasa Takahashi, Moriguchi, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Mar. 17, 1978, Ser. No. 887,767

Claims priority, application Japan, Mar. 17, 1977, 52-30683

Int. Cl.[2] H04N 9/31

U.S. Cl. 358—60 **3 Claims**



1. A projection type color television system which comprises, in combination:

a projecting screen means;

three cathode ray tubes for projecting a color picture on the projecting screen means, each of the three cathode ray tubes having a phosphor screen for producing and projecting onto the projecting screen means a different one of the three primary colors of a light beam containing image information therein, said cathode ray tubes being so positioned with their respective phosphor screens placed on a first imaginary plane in a parallel relation to the projecting screen means and in alignment with each other along a first imaginary line parallel to a horizontal scanning direction of the light beam, one of said cathode ray tubes, which produces the primary color having the highest brightness measured in lumens, being positioned intermediately between the other two cathode ray tubes;

an optical lens means provided for each cathode ray tube and disposed in front of the phosphor screen, in the direction towards the screen means, for focusing the beams on the projecting screen means, said optical lens means being so positioned as to have respective principal planes on a second imaginary plane in parallel relation to the projecting screen means, and in alignment with each other, along a second imaginary line which is parallel to the first imaginary line, said lens means being positioned such that the center of the phosphor screen of each of the cathode ray tubes, the center of the corresponding lens means and the center of the projecting screen means are in an aligned relation with each other; and

a correction circuit means coupled to at least said other two cathode ray tubes for correcting the brightness of the projected image of said other two cathode ray tubes such that the ratio of brightness of the projected image on the screen by each of said other two cathode ray tubes on the sides of the center cathode ray tube is substantially the same with respect to the projected image on the screen of the center cathode ray tube whereby the ratio of brightness of the three colors is the same over the entire area of the projecting screen means;

wherein the correction of the brightness of two colors corresponding to said other two cathode ray tubes is carried out by the following equations:

$$b(\alpha) = \cos^4\alpha - \frac{\cos^4(\alpha + \beta)}{\cos^4\beta} \quad (a)$$

$$r(\alpha) = \cos^4\alpha - \frac{\cos^4(\alpha - \beta)}{\cos^4\beta} \quad (b)$$

wherein $b(\alpha)$ and $r(\alpha)$ represent respective amounts of brightness to be corrected, α represents a horizontal projecting angle of the light beam projected from the cathode ray tube onto the projecting screen means in relation to an axial direction of the cathode ray tube and β represents the angle defined between a line extending from the center of said one of the cathode ray tubes to the center of the projecting screen means and a line extending from the center of the respective other two cathode ray tubes to the center of the projecting screen means.

4,219,844

APPARATUS FOR DETECTING THE SURFACE FLAWS OF A RED-HEATED METAL PART

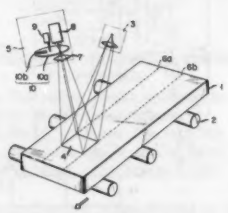
Atushi Ohsumi; Yoshinao Yamagishi; Kaoru Daigo, all of Fukuyama; Tomio Yamamoto, Takamatsu, and Katsuya Yamada, 2773-1, Ooaza Imafuku, Kawagoe-shi, Saitama-ken, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo; Fuji Toyuki Co., Ltd., Takamatsu and Katsuya Yamada, Kawagoe, all of, Japan

Filed Jul. 6, 1977, Ser. No. 813,334

Claims priority, application Japan, Jul. 9, 1976, 51-81784

Int. Cl.[2] H04N 7/18

U.S. Cl. 358—106 **4 Claims**



1. Apparatus for detecting surface flaws on a red-hot heated metal part, comprising:

a light source for illuminating a predetermined area on the surface of a red-hot heated metal part with light rays such that the reflection energy from the red-hot heated metal part corresponding to the light rays from said light source is much larger than the radiation energy radiated from the red-hot heated metal part;

an image pick-up device having a light receiving surface for picking-up an image of the illuminated surface area of the red-hot heated metal part, said image pick-up device gen-

erating video signals corresponding to the picked up image;

shutter means disposed in the optical path between the light receiving surface of said image pick-up device and said light source; and

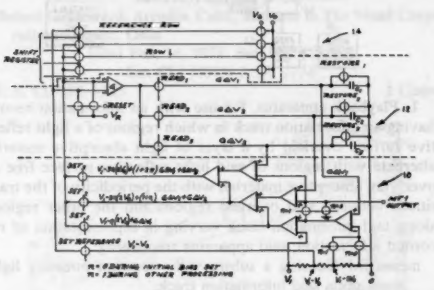
means coupled to said image pick-up device for sampling a signal representing a surface flaw of the red-hot heated metal part from video signals obtained from said image pick-up device.

4,219,845

SENSE AND INJECT MOVING TARGET INDICATOR APPARATUS

Martin D. Gibbons, Camillus, and Richard W. Aldrich, Liverpool, both of N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 12, 1979, Ser. No. 29,585
Int. Cl.² H04N 3/14
U.S. Cl. 358—105 **5 Claims**



1. A sense and inject moving target indicator apparatus comprising in combination:

means for injecting a charge, said charge injecting means having a set reference line and a plurality of set lines, said set reference line having a predetermined charge level thereon, said charge level being variable, each of said plurality of set lines having a controllable, progressively smaller charge level thereon, said set reference line charge level being larger than the charge levels available to each of said plurality of set lines, each of said plurality of set lines being individually selectable, each of said plurality of set lines being connected in common to an output line,

a CID array having a plurality of sensor rows therein, one of said plurality of sensor rows being designated a reference row, any one of the remaining rows of said plurality of sensor rows being designated a selected row, each of said plurality of sensor rows being individually selectable, said reference row being connected to said set reference line, said remaining rows of said plurality of sensor rows being connected in common to said output line, and,

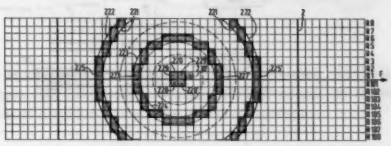
a charge sensing means having a first and second input line, said first input line being connected to said reference row and said reference set line, said second input line being connected to said common line, said charge sensing means differentially sensing the charge applied to said first and second input line, said charge injecting means injecting a reference charge into said reference row, said CID array being charged by a light flash, said charge injecting means injecting said selected row with a first charge, said first charge having a greater level than said reference charge, said charge sensing means differentially reading out the charge in said reference row and selected row, said charge sensing means providing a differential voltage in response to said differential read out, said charge sensing means multiplying said differential voltage signal by a gain factor to provide a correction signal, said correction signal being applied to said charge injecting means, said charge injecting means applying said correction signal to said selected row, said charge sensing means differentially reading out said reference row and selected row to yield a first field signal, said first field signal providing the response to whether or not a moving target indication is present.

4,219,846

DEVICE FOR SCANNING AND DISPLAY BY MEANS OF ULTRASONIC WAVES

Michel J. Auphan, Paris, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 18, 1978, Ser. No. 943,241
Claims priority, application France, Oct. 5, 1977, 77 29935
Int. Cl.² G01N 29/04
U.S. Cl. 358—112 **3 Claims**



1. A device for scanning and display by means of ultrasonic waves comprising:

a rectangular matrix of electro-acoustic transducers disposed in rows and columns;

first switching means which function to establish connections between a group of consecutive transducers within each of the rows and corresponding groups of first common input terminals, the position of the groups of transducers within the rows being variable such that all groups together constitute a rectangular scanning zone which is displaceable along the rows of the matrix;

second switching means comprising a plurality of switches, each of the switches functioning to interconnect a pair of the first common input terminals, the terminals in the pairs being selected so that the second switch means function to interconnect pairs of transducers within each group which are symmetrically situated with respect to the center of that group;

third switch means which function to connect groups of the interconnected first common input terminals to selected second terminals, the second terminals being arranged in ranks, the connections being established so that each transducer pair is connected to a second terminal whose rank corresponds to the distance between the transducers of the pair and the center of the zone;

interconnecting means which include a plurality of output lines and which function to interconnect second terminals of the same rank to form approximately annular configurations of interconnected transducers within the scanning zone, each annular configuration being further connected to a separate output line of the interconnecting means;

means for generating electrical signals which produce ultrasonic beams from the transducers;

means for storage and/or display of an image; and

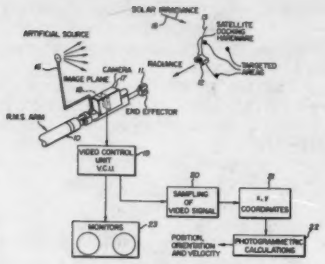
means for selectively connecting the output lines of the interconnecting means to the means for generating or to the means for storage and/or display.

4,219,847

METHOD AND APPARATUS OF DETERMINING THE CENTER OF AREA OR CENTROID OF A GEOMETRICAL AREA OF UNSPECIFIED SHAPE LYING IN A LARGER X-Y SCAN FIELD

Harold F. L. Pinkney, and Charles I. Perratt, both of Ottawa, Canada, assignors to Canadian Patents & Development Limited, Ottawa, Canada

Filed Feb. 22, 1979, Ser. No. 14,207
Claims priority, application Canada, Mar. 1, 1978, 297965
Int. Cl.[2] H04N 7/18
U.S. Cl. 358—126 1 Claim



1. A method of obtaining on-line data useful in determining the center of area or centroid of a geometrical area of unspecified shape lying in a larger x-y scan field and having its existence indicated by a level discriminated amplitude or intensity or a parameter measurable in the z-dimension comprising:

(a) scanning the x-y field in a known raster pattern and obtaining a series of discrete output voltage pulses related to elemental x-y points in the scan field and having an amplitude related to the amplitude or intensity of the said parameter;

(b) generating a series of discrete clock pulses related to elemental x-y points in the scan field;

(c) obtaining a series of x and y synchronizing pulses from and related to the x-y scan field;

(d) establishing in relation to the clock pulses and the x and y synchronizing pulses a smaller x-y scan field in the form of a rectangular window around the geometrical area in the larger x-y scan field, the boundaries as x-y co-ordinates of the said window being known;

(e) identifying, from the series of discrete clock pulses, those pulses that coincide with pulses obtained in (a) having an amplitude above a preset voltage level and which fall within the boundaries of the smaller x-y scan field such as to define sample point areas in the geometrical area;

(f) making an overall count of the number of pulses identified as in (e);

(g) making a count of the number of elemental x-y point each of the pulses identified in (e) are spaced from a boundary of the window in both the x and the y directions to provide x-moment arm counts and y-moment arm counts; and

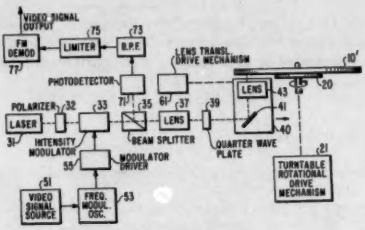
(h) summing the x-moment arm counts and the y-moment arm counts, said counts taken with the count obtained from (f) providing data for computing the center of area or other mathematical functions of the geometrical area.

4,219,848

OPTICAL RECORD PLAYBACK APPARATUS EMPLOYING LIGHT FREQUENCY AT WHICH ALTERNATE REGIONS OF RECORD TRACK EXHIBIT ANTI-REFLECTION CONDITION

Fred W. Spong, Lawrenceville, N.J., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 668,495, Mar. 19, 1976, Pat. No. 4,097,895.
This application Oct. 31, 1977, Ser. No. 847,462
Int. Cl.[2] H04N 5/76; G11B 7/00
U.S. Cl. 358—128.5 3 Claims



1. Playback apparatus, for use with an information record having an information track in which regions of a light reflective surface overlaid by a layer of light absorptive material alternate with regions of said light reflective surface free of overlying absorptive material, with the periodicity of the transitions between said overlaid regions and the other regions along said information track varying in representation of recorded information; said apparatus comprising:

means for focusing a substantially constant intensity light beam upon said information track;

means for moving the successive regions of such information track through the path of said focused light beam; and

light detecting means responsive to light reflected from said information track;

wherein said beam focusing means includes a laser establishing the light frequency of said focused beam at a frequency substantially coincident with the frequency at which said overlaid regions of said information track exhibit a maximum anti-reflection condition providing substantially zero reflectance at the surface of said layer remote from said reflective surface.

4,219,849

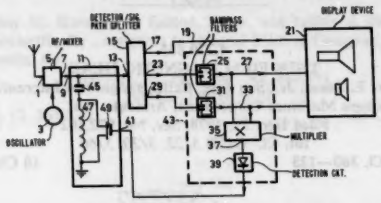
TELEVISION RECEIVER HAVING A CONTROLLABLE SOUND SUPPRESSION FILTER

Peter J. H. Janssen; Hendrik Kolk, and Wilhelmus J. Christis, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 21, 1978, Ser. No. 962,830
Claims priority, application Netherlands, Nov. 23, 1977, 7712887
Int. Cl.[2] H04N 5/62
U.S. Cl. 358—197 2 Claims

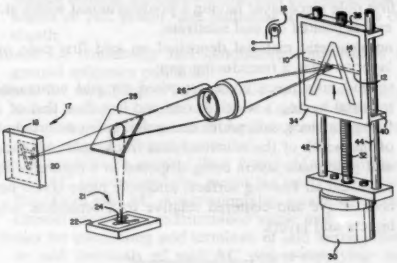
1. A television receiver having a chrominance sub-carrier signal path, a video signal path and a sound intercarrier signal path and, incorporated before the point where a television signal path is split into the chrominance sub-carrier signal path, the sound intercarrier signal path and the video signal path, a controllable sound suppression filter having a control signal input for applying a control signal for controlling the degree of sound suppression, and a product amplitude detection circuit coupled to said control signal input, wherein the product

amplitude detection circuit comprises a circuit for detecting the product of the amplitude of a sound intercarrier signal and



the amplitude of a chrominance sub-carrier signal from a received television signal.

4,219,850
OPTICAL ENCODER
Robert C. Howard, Arcadia, Calif., assignor to The Mead Corporation, Dayton, Ohio
Filed Feb. 16, 1978, Ser. No. 878,255
Int. Cl.[2] H04N *1/12, 1/18*
U.S. Cl. 358—285 **2 Claims**



1. A scanner for providing simultaneously electrical signals representative of the density of a master image at scan points positioned in a first scan row on the image and for providing simultaneously electrical signals representative of the density of a master image at scan points positioned in a second scan row on the image, said second scan row extending substantially parallel to said first scan row, said first and second scan rows being spaced apart on the master image in a direction perpendicular to said scan rows, comprising:

means for illuminating said master image,

a first photoelectric scanning means, including photoelectric transducers positioned in a first transducer row, for providing electrical signals in response to the amount of light striking said transducers,

a second photoelectric scanning means, including photoelectric transducers positioned in a second transducer row, for providing electrical signals in response to the amount of light striking said transducers,

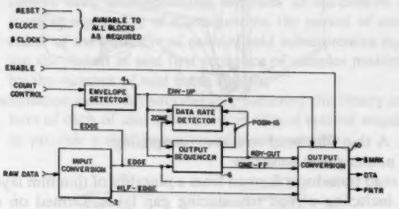
optical focusing means for directing light from said master image toward said first photoelectric scanning means such that each of the photoelectric transducers in said first photoelectric scanning means receives light directed from an associated scan point on said master image in said first scan row,

optical diversion means for diverting to said second photoelectric scanning means, a portion of the light directed by said optical focusing means toward said first photoelectric means such that each of the photoelectric transducers in said second photoelectric scanning means receives light reflected from an associated point on said master image in said second scan row, and

means for altering the relative position of said optical focusing means with respect to said master image,

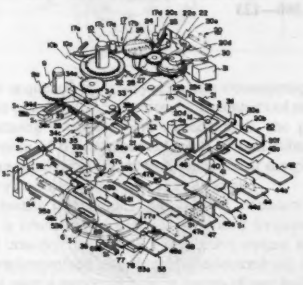
said first and second photoelectric scanning means focusing means with respect to said master image results in movement of scan points in a direction which is oblique to said scan rows.

4,219,851
GROUP CODED RECORDING DATA RECOVERY SYSTEM
Nicholas S. Lemak, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.
Filed Nov. 24, 1978, Ser. No. 963,639
Int. Cl.[2] G11B *5/09*
U.S. Cl. 360—40 **14 Claims**



4. A digital data recovery system according to claim 2 wherein said first means includes filtering means for eliminating short duration excursions of the input data.

4,219,852
IMPROVED CASSETTE RECORDER HAVING SIMPLIFIED OPERATION
Yoshihiro Magata, Kawagoe; Kobun Yoshida, Kamifukuoka, and Itsuo Kato, Sayama, all of Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan
Filed Oct. 26, 1978, Ser. No. 954,881
Claims priority, application Japan, Oct. 28, 1977, 52-129350
Int. Cl.[2] G11B *5/54, 15/24*
U.S. Cl. 360—90 **15 Claims**



1. A cassette tape recorder which includes playback and stop means mounted on a chassis for controlling the function of the recorder, the improvement which comprises: a head carriage having at least a playback head, said carriage being slidably mounted on said chassis and shiftable between an operating position and another position, cam disc means for shifting said head carriage between said operating and another position, said cam disc means being operably connected to said carriage and with means for causing it to rotate one half turn thereby causing said shift in the carriage, said means for rotating the cam disc means being connected with and activated by playback and stop means, whereby activation of said playback or

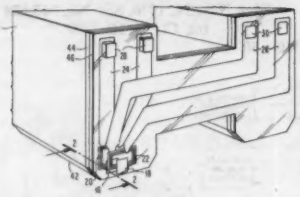
stop means causes said carriage to shift between the operating and another position.

4,219,853

READ/WRITE THIN FILM HEAD

Paul A. Albert, and Thomas N. Kennedy, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 21, 1978, Ser. No. 972,101
Int. Cl.² G11B 5/12, 5/22, 5/42, 5/60
U.S. Cl. 360—103 **12 Claims**



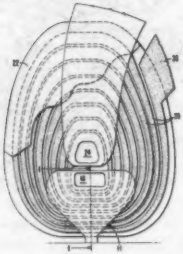
1. A thin film head structure comprising:
a nonmagnetic substrate;
a read transducer formed from a plurality of thin film layers, including a read transducing gap layer, formed on one surface of said substrate;
a thick transparent insulator layer formed on said read transducer;
a write transducer formed from a plurality of thin film layers, including a write transducing gap layer, formed on said thick insulating layer; and
a protective insulating overcoat layer formed on said write transducer.

4,219,854

THIN FILM MAGNETIC HEAD ASSEMBLY

Mark A. Church, Los Gatos, and Robert E. Jones, Jr., San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 21, 1978, Ser. No. 972,103
Int. Cl.² G11B 5/20, 5/22, 5/60
U.S. Cl. 360—123 **5 Claims**



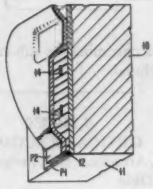
1. A thin film magnetic head assembly comprising:
a nonmagnetic substrate having at least one formed surface;
first and second magnetic pole piece layers deposited on said substrate;
a nonmagnetic insulating material disposed between said pole piece layers, said material forming a transducing gap located adjacent to said formed surface;
said pole pieces being connected to form a back gap closure; and
an electrically conductive coil having a plurality of turns located between said back gap closure and said transducing gap, said coil being formed in a single planar layer and in an elliptical pattern.

4,219,855

THIN FILM MAGNETIC HEAD

Robert E. Jones, Jr., San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 21, 1978, Ser. No. 972,102
Int. Cl.² G11B 5/22, 5/20, 5/60
U.S. Cl. 360—125 **10 Claims**



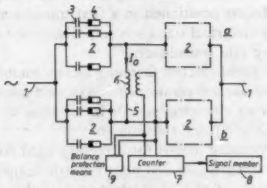
1. A thin film magnetic head assembly comprising:
a nonmagnetic substrate having an air bearing surface;
a first pole piece layer having a predetermined width at one end deposited on said substrate;
a nonmagnetic material deposited on said first pole piece layer to form a transducing gap;
a second pole piece layer deposited on said nonmagnetic material having a width at one end less than that of said first pole piece, said width dimension being determinative of the width of the recorded data track, said one ends of said pole piece layers being disposed in a common plane with said air bearing surface, said pole piece layers being coextensive and centered relative to a centerline which bisects said layers.

4,219,856

PROTECTIVE DEVICE FOR CAPACITOR BANK

Per Danfors, Ludvika; Nils Fahlen, Vesteras, and Owe Nerf, Farsta, all of Sweden, assignors to ASEA Aktiebolag, Vesteras, Sweden

Filed Mar. 2, 1978, Ser. No. 882,689
Claims priority, application Sweden, Mar. 11, 1977, 7702749
Int. Cl.² H02H 7/16
U.S. Cl. 361—15 **7 Claims**

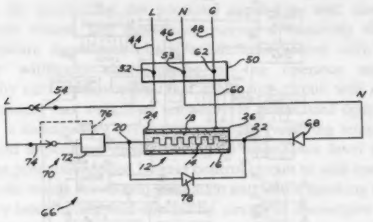


1. A protective device for a capacitor bank comprising two parallel capacitor sub-banks, each consisting of capacitor units, which protective device comprises at least one cross-connection means connected between equipotential points in the two sub-banks, characterized in that sensing means is connected to said cross-connection for sensing current surges in the cross-connection means resulting from one or more short-circuits in a capacitor unit, and counter means coupled to said sensing means for counting said current surges.

4,219,857
PROTECTIVE METHOD AND CIRCUITS FOR SHEATHED ELECTRICAL RESISTANCE HEATING UNITS

Eythor M. Haraldsson, Easton, Mass., and LeRoy J. Herbst, Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Dec. 22, 1977, Ser. No. 863,501
Int. Cl.² H02H 3/16
U.S. Cl. 361—42 23 Claims



1. A protective circuit comprising:

a sheathed electrical resistance heating unit including a heating element having two terminals for connection to a source of AC power, and including a conductive outer sheath;

means for connecting said conductive outer sheath to a ground reference potential;

means for supplying AC power, said AC power-supplying means having two terminals, one of said terminals of said AC power-supplying means supplying a voltage relative to the ground reference potential;

means sensitive to current flow from said one terminal of said AC power-supplying means for interrupting current flow from said AC power-supplying means when sensed current exceeds a predetermined value; and

means for connecting said terminals of said heating element to said terminals of said AC power-supplying means, including means for continuously connecting one of said heating element terminals to said one terminal of said AC power-supplying means and means for effectively connecting the other of said heating element terminals to said one terminal of said AC power-supplying means during alternate half-cycles of the supplied AC power;

the predetermined current value being higher than the normal load current of said heating element and lower than the current during fault conditions;

whereby, in the event a fault occurs between said heating element and said conductive outer sheath near either end of said heating unit, sufficient additional current is drawn from said one terminal of said AC power-supplying means to cause said current-sensitive means to interrupt the current flow.

4,219,858
OVERCURRENT RELAY APPARATUS

Robert P. DePuy, Cherry Hill, N.J., and Arthur H. Leitten, Jr., Syracuse, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 20, 1978, Ser. No. 971,312
Int. Cl.² H02H 3/08
U.S. Cl. 361—93 9 Claims

1. A system for providing a plurality of output signals, each in response to a respective one of a plurality of simultaneously occurring alternating input signals of a first frequency, each exceeding a respective preset pick up level, the time of occurrence of each of said output signals in relation to the time at which a respective input signal exceeds said respective pick up level varying in an inverse relationship to a mean value of said respective input signal comprising

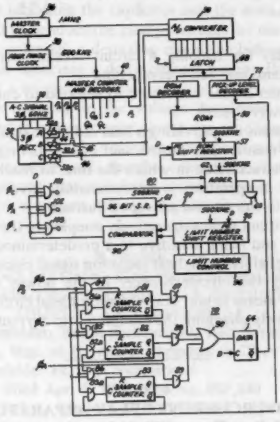
means for periodically sampling said plurality of input signals in sequence at a second frequency greater than said first frequency to provide a first sequence of samples of said input signals, said first sequence constituted of successive sets of samples, corresponding numbered samples of successive sets forming a subsequence, each subsequence including samples of a respective input signal, each subsequence having a period equal to the period of said first sequence of samples multiplied by the number of said input signals,

means for converting the absolute value of each of said samples of said first sequence into a respective binary number to provide a first sequence of binary numbers,

means for converting each of said binary numbers of said first sequence into a respective derived binary number to provide a second sequence of binary numbers,

said second sequence of binary numbers constituted of successive sets, corresponding numbers of successive sets forming a plurality of subsequences, the period of occurrence of the numbers of each of said subsequences equaling the period of said first sequence of samples multiplied by the number of said input signals,

summation means for successively summing the binary numbers of each of said subsequences of said second sequence to provide a third sequence of binary numbers,



said third sequence of binary numbers constituting successive sets of numbers, corresponding numbers of successive sets forming a plurality of subsequences, the period of occurrence of the numbers of each of said subsequences equaling the period of said first sequence of samples multiplied by the number of said input signals,

counter means including a plurality of counters each of which is continuously clocked at a third frequency, each of said counters providing a respective output at the end of a predetermined count, said predetermined count occurring over a period of time in excess of one-half cycle of said input signals,

means responsive to the output from each of said counters for resetting a respective number of said third sequence of numbers in said summation means,

means responsive to a binary number corresponding to a sample of one of said signals in excess of said pick up level to reset a respective counter, whereby when said one of said input signals exceeds said pick up level and remains above said pick up level, said respective counter is reset periodically within a count less than said predetermined count, and when said one of said input signal drops below said pick up level for a period of time, corresponding to said predetermined count, an output is obtained which

resets said respective number of said third sequence in said summation means,

means for providing a plurality of binary numbers each representing respective one of a plurality of limit numbers,

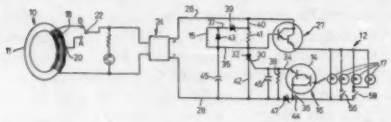
comparator means for continuously comparing each subsequence of binary numbers of said third sequence in said summation means with a respective one of said limit numbers and for providing an output signal when a binary number of said subsequence exceeds a respective limit number.

4,219,859

MULTIPLE RANGE INVERSE TIME OVERCURRENT RELAY

Michael J. Estes, Scotts Valley, Calif., assignor to RTE Corporation, Waukesha, Wis.

Filed Jan. 11, 1979, Ser. No. 2,532
Int. Cl.² H02H *3/08*
U.S. Cl. 361—93 **10 Claims**



1. A relay for tripping a circuit breaker connected in a power system, said relay comprising

transformer means connected to respond to current flow in the power system

circuit means for providing a heat radiation signal connected to the transformer means, said means having a time current characteristic in which the time to reach a predetermined temperature is approximately inversely proportional to the second power of current,

sensing circuit means operatively coupled to the transformer means and being sensitive to a predetermined heat radiation signal from the heat radiation signal circuit means for tripping the circuit breaker in the power system, and switch means in said heat radiation signal circuit means for selectively changing the minimum trip current level of the relay.

4,219,860

OVERCURRENT RELAY APPARATUS

Robert P. DePuy, Cherry Hill, N.J., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 20, 1978, Ser. No. 971,313
Int. Cl.² H02H *3/08*
U.S. Cl. 361—94 **5 Claims**

1. A system for providing an output signal in response to an alternating input signal of a first frequency exceeding a preset pick up level, the time of occurrence of said output signal in relation to the time at which said input signal exceeds said pick up level varying in an inverse relationship to a mean value of said input signal comprising

means for periodically sampling said input signal at a second frequency greater than said first frequency to provide a first sequence of samples of said input signal,

means for converting the absolute value of each of said samples into a respective binary number to provide a first sequence of binary numbers,

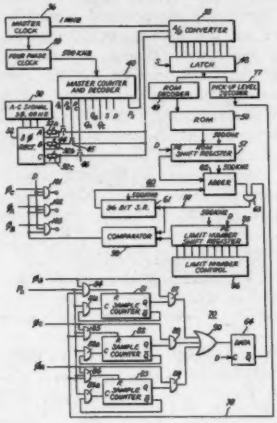
means for converting each of said binary numbers of said first sequence into a respective derived binary number to provide a second sequence of binary numbers,

summation means for successively summing the binary numbers of said second sequence to provide a third sequence of binary numbers,

counter means continuously clocked at a third frequency, said counter means providing an output at the end of a predetermined count, said predetermined count occurring over a period of time in excess of the duration of one-half cycle of said input signal,

means responsive to an output from said counter means for resetting said summation means,

means responsive to a binary number corresponding to a sample in excess of said pick up level to reset said counter means, whereby when said input signal exceeds said pick up level and remains above said pick up level, said counter means is reset periodically within a count less than said predetermined count, and when said input signal drops



below said pick up level for a period of time, corresponding to said predetermined count, an output is obtained which resets said summation means,

means for providing a binary number representing a limit number,

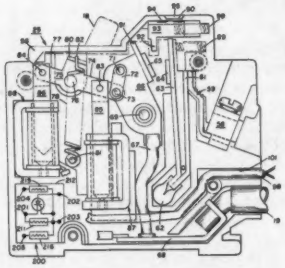
comparator means for continuously comparing each of the binary numbers of said third sequence in said summation means with said limit number and for providing an output signal when a binary number of said third sequence exceeds said limit number.

4,219,861

PROTECTOR CIRCUIT FOR SOLENOID OPERATOR

Henry Wiegand, Philadelphia, Pa., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Nov. 27, 1978, Ser. No. 963,754
Int. Cl.² H01H *51/12*
U.S. Cl. 361—106 **12 Claims**



1. Switching apparatus including an interrupter section comprising main contact means for series connection in a load circuit, a spring powered mechanism connected to said main

contact means, electrically powered operator means connected to said mechanism for selectively operating the latter to open and close said main contact means, and protector means to prevent burnout of said operator means; said protector means including a solid state unit having power electrode means connected in series with said operator means in an energizing circuit for said operator means, and control electrode means to regulate current flow in said energizing circuit; said protector means also including a control circuit in series with a portion of said energizing circuit and controlling the potential at said electrode means; said control circuit including impedance means for controlling the potential applied to said control electrode means; said impedance having a relatively sharp temperature impedance characteristic coordinated with the energy withstand characteristic of the operator means whereby current flowing in said energizing circuit will raise said element to a switching temperature before said operator means is damaged by overheating; at said switching temperature said impedance means having an impedance level such that the potential applied by said control circuit to said control electrode means drives said solid state unit into a blocking state thereby interrupting said energizing circuit to deenergize said operator means.

4,219,862

LIGHTNING ARRESTER DEVICE

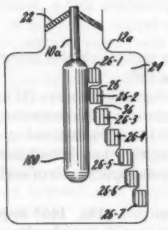
Tohei Nitta; Yoshikazu Shibuya, and Yukio Fuziwara, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 16, 1978, Ser. No. 916,053

Claims priority, application Japan, Jun. 22, 1977, 52/74694; Sep. 30, 1977, 52/118154; Oct. 24, 1977, 52/127874

Int. Cl.[2] H02H 3/22

U.S. Cl. 361—120 **7 Claims**



1. An encapsulated lightening arrester, comprising: a hollow cylindrical electrically conductive housing; an electric conductor extending into said hollow cylindrical housing and insulated from said hollow cylindrical housing; a plurality of stacked serially connected nonlinear resistors stacked in at least one stack within said hollow cylindrical housing, said stack of said serially connected nonlinear resistors having one end connected to said electric conductor and having another end connected to said hollow cylindrical housing for defining an electrically resistive path between said electric conductor and said housing; at least one shielding conductor within said housing and extending along a side of said stack of nonlinear resistors; and wherein said stack of nonlinear resistors is positioned within said cylindrical housing excentrically of said cylindrical housing, and said shielding conductor extending from said electric conductor inclined relative to said stack and extending progressively radially further from said stack in a direction along said stack away from said electric conductor and with an orientation to impart in operation a uniform electric field profile to said nonlinear resistors.

4,219,863

DRIVE CIRCUIT FOR SOLENOID PUMP

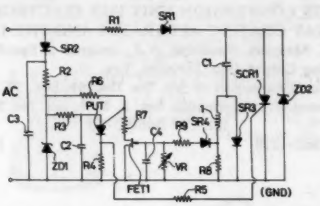
Sadao Takeshima, Higashimatsuyama, Japan, assignor to Jidoshakiki Co., Ltd., Tokyo, Japan

Filed Feb. 23, 1979, Ser. No. 14,498

Claims priority, application Japan, Mar. 15, 1978, 53-33116[U]

Int. Cl.[2] H01H 47/00

U.S. Cl. 361—156 **5 Claims**



1. A drive circuit for solenoid pump comprising a discharge circuit including a solenoid of a solenoid pump, a capacitor adapted to be charged with a d.c. current from an a.c. source through a rectifier and to discharge for supplying a drive current to the solenoid, a thyristor for controlling the conduction of a path including the capacitor and the solenoid, and a rectifier poled to conduct the charge current for the capacitor bypassing the solenoid; a detecting circuit including a detecting resistor for detecting a drive current passing through the solenoid, and a second capacitor adapted to be charged and discharged in response to the voltage developed across the detecting resistor; and a trigger circuit for rendering the thyristor conductive when the voltage across the second capacitor reaches a given threshcld, thereby controlling the period of oscillation of the trigger circuit in accordance with the magnitude of the drive current through the solenoid.

4,219,864

DEVICE AND METHOD FOR MOISTENING AND/OR DISCHARGING ELECTRICALLY INSULATING OBJECTS AND MATERIALS

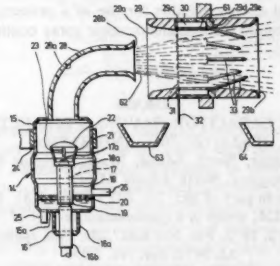
Hans Grünenfelder, Basel, Switzerland, and Herman Künzig, Weil, Fed. Rep. of Germany, assignors to Eltex-Elektronik H. Grünenfelder El. Ing., Switzerland

Filed Apr. 4, 1978, Ser. No. 893,340

Claims priority, application Switzerland, Apr. 4, 1977, 4175/77

Int. Cl.[2] B05B 5/02

U.S. Cl. 361—228 **14 Claims**



1. A device for moistening and/or discharging electrically insulating objects and materials, in particular webs and sheets of paper and plastic, comprising: an atomizer for atomizing water to produce droplets; a body having a passage therethrough for receiving the atomized water and having an outlet opening; a plurality of sharp charging electrodes extending

into the passage of said body for charging the droplets and for forming a cloud in the area of said charging electrodes; said body including an electrically insulating wall surface bounding said passage in at least the area of said charging electrodes and said outlet opening; and a high voltage source connected to said charging electrodes for charging the droplets.

4,219,865

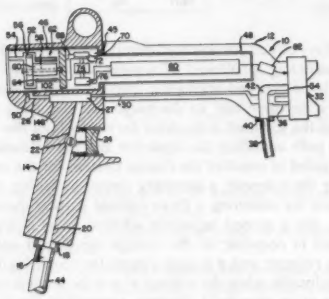
ENERGY CONVERSION UNIT FOR ELECTROSTATIC SPRAY COATING APPARATUS AND THE LIKE

David H. Malcolm, Randolph, N.J., assignor to Speeflo Manufacturing Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 754,161, Dec. 27, 1976, abandoned. This application Sep. 5, 1978, Ser. No. 939,171

Int. Cl.[2] **B05B** *5/02*

U.S. Cl. 361—228 **16 Claims**



1. In electrostatic spray coating, apparatus having a self contained electrical power supply devoid of external electrical connection thereto, means for converting the kinetic energy of a moving air stream into electrical energy comprising,

rotatable turbine means having a low moment of inertia peripherally exposed to a stream of air moving at high speed for converting the kinetic energy of said stream of air into kinetic energy of a rotating mass,

alternator means having a low moment of inertia and a common axis of rotation with said turbine means and directly driven thereby,

said rotatable turbine means and alternator means jointly constituting a composite low moment of inertia rotatable means accelerable from rest to an operating speed of over 10,000 r.p.m. in less than ¼ second for rapidly converting the kinetic energy of said stream of air into alternating electrical energy suitable for use as a primary electrical power source for said electrostatic spray coating apparatus.

4,219,866

CERAMIC CAPACITOR HAVING A DIELECTRIC OF $(Pb,La)(Zr,Ti)O_3$ AND $BATIO_3$

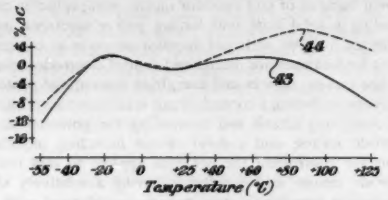
Galeb H. Maher, North Adams, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Continuation-in-part of Ser. No. 802,160, May 31, 1977, Pat. No. 4,135,224, which is a continuation-in-part of Ser. No. 619,089, Oct. 2, 1975, Pat. No. 4,027,209. This application Jan. 12, 1979, Ser. No. 2,837

Int. Cl.[2] **H01G** *4/12*

U.S. Cl. 361—321 **6 Claims**

1. A ceramic capacitor comprising a dielectric body and two spaced electrodes in contact with said body, at least 90 weight percent of said body consisting of a ceramic composed of a lead zirconate and a barium titanate wherein from 0.07 to 0.16 molar parts of said lead are replaced by lanthanum, wherein from 0.10 to 0.40 molar parts of said zirconate are replaced by titanate, and wherein the atomic ratio of barium to lead is from



0.015 to 0.39, said ceramic being doped with from 0.1 to 1.5 weight percent silver.

4,219,867

VEHICLE HEADLIGHT WITH POLARIZED AND NON-POLARIZED LIGHT EMISSION

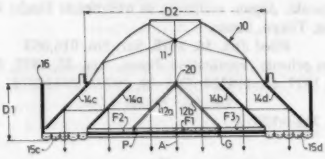
Ernst Zehender, Althengstett-Ottenbrunn, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 25, 1978, Ser. No. 954,640

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1977, 2753545

Int. Cl.[2] **F21V** *9/14;* **B60Q** *1/00;* **G02B** *5/30*

U.S. Cl. 362—19 **4 Claims**



1. A headlight for motor vehicles, comprising:

a parabolic mirror (**10**),

means for supporting a light source (**11**) at the focus thereof,

an interference polarizer (**12**) comprising two partial, plane, polarizer plates (**12***a*, **12***b*) disposed at an angle of 45° with respect to one another and joined along an apex line (**20**) which intersects the optical axis of said parabolic mirror at right angles

two first plane mirrors (**14***a*, **14***b*) disposed, respectively, laterally parallel to said partial polarizer plates (**12***a*, **12***b*) and in such a manner that the projections of said first plane mirrors (**14***a*, **14***b*) onto a plane defined by said optical axis and by said apex line (**20**) are substantially congruent with the projections thereon of said partial polarizer plates (**12***a*, **12***b*) and that the projections of said first plane mirrors (**14***a*, **14***b*) onto a plane perpendicular to the optical axis are continguous without overlap to the projections thereon of said partial polarizer plates (**12***a*, **12***b*),

means (F_1, F_2, F_3) for rotating the plane of polarization of the light from said polarizer (**12**)

and wherein, the rear surfaces of said first plane mirrors (**14***a*, **14***b*) facing said parabolic mirror are rendered reflective so as to intercept and deviate laterally light from said parabolic mirror;

and two second plane mirrors (**14***c*, **14***d*) are provided, disposed parallel, respectively, to said first plane mirrors (**14***a*, **14***b*) and in such a manner that their projections onto a plane defined by said optical axis and by said apex line (**20**) do not extend beyond the projections thereon of said first plane mirrors (**14***a*, **14***b*) and that their projections onto a plane perpendicular to the optical axis are contigu-

ous without overlap to the projections thereon of said first plane mirrors (**14***a*, **14***b*),

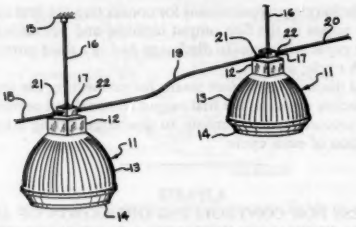
whereby light emitted from said source which has not been polarized will be, reflected laterally by the rear surfaces of said first plane mirrors (**14***a*, **14***b*) and is then reflected forward by said second plane mirrors (**14***c*, **14***d*) in the direction of the optical axis to provide a mixture of polarized and unpolarized light, the polarized light being radiated essentially in the direction of said optical axis.

4,219,868

PLUG-IN LIGHTING SYSTEM

Robert W. Bowman, and Raymond A. Brown, both of Crawfordsville, Ind., assignors to National Service Industries, Inc., Atlanta, Ga.

Filed May 30, 1978, Ser. No. 910,846
Int. Cl.[2] **F21S** *1/02, 1/04*
U.S. Cl. 362—147 **5 Claims**



1. A lighting system for a zone in a building structure comprising a luminaire having a socket mounting a high intensity lamp, a lighting circuit connected for energizing said lamp, reflector means at least partially surrounding said lamp for directing light downwardly in a predetermined pattern, a housing and means attaching said housing to said reflector, said luminaire having an axis about which such directed light is substantially symmetrical, a first connector mounted on said housing on one side of said axis, a second connector mounted on said housing on an opposite side of said axis, means electrically interconnecting said connectors and said lighting circuit, a first cable means engaging said first connector for supplying power through said interconnecting means to said lighting circuit and to said second connector, means attached to said housing for attaching said housing to such building structure above the zone, and means for adjusting the location of said attaching means on said housing in a linear direction between said one side and said opposite side of said axis to vertically orient said luminaire axis.

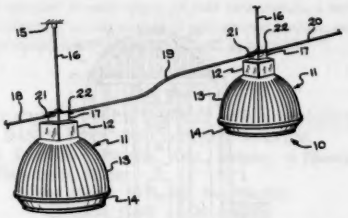
4,219,869

APPARATUS FOR MOUNTING AND SUPPLYING POWER TO A LUMINAIRE

Robert W. Bowman, and Raymond A. Brown, both of Crawfordsville, Ind., assignors to National Service Industries, Inc., Atlanta, Ga.

Filed May 30, 1978, Ser. No. 910,847
Int. Cl.[2] **F21S** *1/02, 1/04*
U.S. Cl. 362—147 **9 Claims**

1. Apparatus for mounting a luminaire on a supporting member in a building structure and for supplying power to said luminaire, said luminaire having an electrical connector mounted thereon and a lighting circuit connected to said electrical connector, said apparatus comprising a connector housing, first, second and third electrical connectors mounted in said housing with said third connector positioned to engage said luminaire connector, said first, second and third connectors having corresponding pluralities of terminals, means in said housing electrically interconnecting corresponding terminals in said first, second and third connectors, first circuit means for engaging said first connector, second circuit means for engaging said second connector, said first circuit means supplying power to said luminaire and to said second circuit means, releasable means connecting said housing to said luminaire, and third connector engaging said luminaire connector when said housing is connected to said luminaire and said third connector disengaging said luminaire connector when said



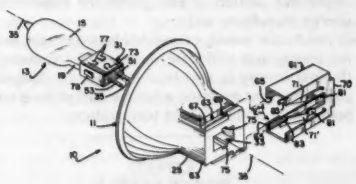
housing is released from said luminaire, means for attaching said housing to the supporting member in such building structure, and wherein said housing includes an inner housing mounting said first, second and third connectors, and an outer housing mounting said inner housing with said first and second connectors projecting from said outer housing and said third connector retained in said outer housing.

4,219,870

FRONT LOADING PROJECTION UNIT

Thomas Haraden, Ipswich, and Harold L. Hough, Beverly, both of Mass., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Jul. 7, 1978, Ser. No. 922,872
Int. Cl.[2] **H01R** *33/00*
U.S. Cl. 362—226 **11 Claims**

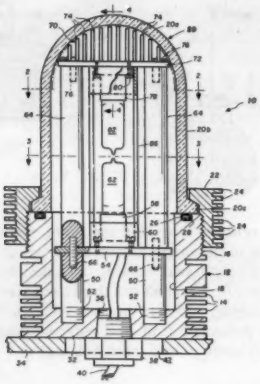


1. In a projection unit including a glass reflector having a front concave reflecting portion and a neck portion adjacent thereto, an incandescent lamp including an envelope portion and a sealed end adjacent said envelope portion, and a first retention member removably oriented within said neck portion of said glass reflector for engaging and retaining said sealed end of said lamp therein to maintain said lamp in established alignment within said glass reflector whereby said envelope portion of said lamp will be located within said front concave portion of said reflector and said sealed end of said lamp will be located within said neck portion, the improvement wherein said first retention member having said sealed end of said lamp therein is removable through said front concave reflecting portion of said reflector.

4,219,871
HIGH INTENSITY NAVIGATION LIGHT

Herbert Larrimore, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 22, 1978, Ser. No. 908,350
Int. Cl.³ F21V *29/00*
U.S. Cl. 362—264 **10 Claims**



1. A watertight light fixture for use in preventing collision at sea, said light fixture comprising:

a rigid metal base member adapted to be mounted on a ship or vessel;

a hollow glass globe formed with a closed upper end portion and an open lower end, said globe having light transmissivity characteristics that vary in amount and chromaticity with changes of temperature and which lie in predetermind desired ranges only when the temperature of said globe is below a predetermined temperature;

means, cooperating with said globe and said base member, for securing said open end of said globe against said base member in a direct heat transferring relation thereto;

incandescent lamp means, disposed within said globe, for emanating light energy including light within said predetermined range of chromaticity;

heat collector means, disposed within the upper region of said globe and adjacent to the inner surface of said closed upper end portion of said globe, for extracting thermal energy therefrom; and

heat conductor means, connected between said heat collector means and said base member, for transferring said thermal energy to said base member for dissipation to a cooler ambient medium, whereby said globe is maintained below said predetermined temperature.

4,219,872
POWER SUPPLY

Rudolph H. Engelmann, St. Paul, Minn., assignor to James Von Bank, Robbinsdale and John W. Adams, Wayzata, both of, Minn., part interest to each

Filed Dec. 11, 1978, Ser. No. 968,019
Int. Cl.² H02M *7/06*
U.S. Cl. 363—126 **24 Claims**

1. A power supply for providing a DC output voltage, the power supply comprising:

first and second input terminals adapted to be connected to a source of AC input power;

first and second output terminals for supplying a DC output voltage;

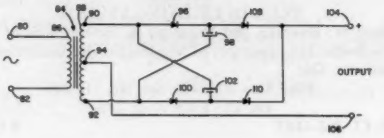
transformer means having a primary and a secondary, the primary being connected to the first and second input terminals and the secondary having first and second phase terminals and having a center tap terminal connected to the second output terminal;

first capacitor means;

second capacitor means;

first charging circuit means connected to the secondary for charging the first capacitor means during a first portion of each cycle;

second charging circuit means connected to the secondary for charging the second capacitor means during a second portion of each cycle;



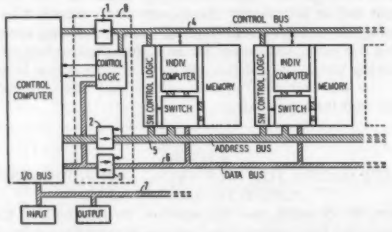
first discharging circuit means for connecting the first capacitor means to the first output terminal and permitting the first capacitor means to discharge during a third portion of each cycle; and

second discharging circuit means for connecting the second capacitor means to the first output terminal and permitting the second capacitor means to discharge during a fourth portion of each cycle.

4,219,873
PROCESS FOR CONTROLLING OPERATION OF AND DATA EXCHANGE BETWEEN A PLURALITY OF INDIVIDUAL COMPUTERS WITH A CONTROL COMPUTER

Rudolf Kober, Munich; Herbert Kopp, Sauerlach, and Christian Kuznia, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 15, 1976, Ser. No. 732,988
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1975, 2546202
Int. Cl.² G06F *15/16*
U.S. Cl. 364—200 **3 Claims**



1. A method of operating a computer system in which a control computer and a plurality of individual computers each have a memory, and switching devices are connected between the inputs and outputs of the memories and the control computer, comprising the steps of:

executing a program with the control computer to inform the individual computers of the respective processes they are to carry out;

simultaneously and independently operating the individual computers through their assigned processes;

generating a stop signal with each individual computer upon completion of the assigned process;

transmitting the stop signals to the control computer; and

exchanging data between the individual computers under the control of the control computer.

4,219,874

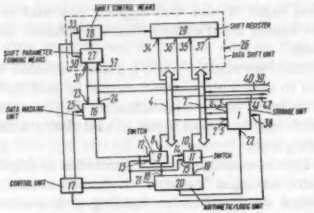
DATA PROCESSING DEVICE FOR VARIABLE LENGTH MULTIBYTE DATA FIELDS

Valery F. Gusev, ulitsa Karbysheva, 13-a, kv. 35; Gennady N. Ivanov, ulitsa Dekabristov, 184-a, kv. 22, both of Kazan; Vladimir Y. Kontarev, Ploschad Junosti, 4, kv. 3, Moscow; Genrikh I. Krengel, ulitsa Ibragimova, 45, kv. 49, Kazan; Evgeny O. Polivoda, ulitsa Kuibysheva, 32, kv. 24, Kazan; Alexandr N. Skvortsov, ulitsa Volodarskogo, 8, kv. 22, Kazan; Jury I. Schetinin, 103536, korpus 503, kv. 106, Moscow; Vyacheslav Y. Kremlev, Berezovaya alleya, korpus 423, kv. 81, Moscow; Mansur Z. Shagivaleev, ulitsa Karbysheva, 17, kv. 75, Kazan, and Azat U. Yarmukhametov, ulitsa Adelya Kutuya, 12, kv. 23, Kazan, all of U.S.S.R.

Filed Mar. 17, 1978, Ser. No. 887,531

Int. Cl.[2] G06F *7/38, 13/00*

U.S. Cl. 364—200 **5 Claims**



1. A device for processing multibyte data fields of variable length, comprising:

a control unit, for controlling the cooperation of units of the device during the processing of multibyte data fields, having a multichannel output and first, second, third and fourth outputs;

a storage unit, for storing operands, intermediate results and processing results, having an input, a control input, a first data input, a second data input, a first data output and a second data output, said control unit input of said storage unit being coupled to said first output of said control unit;

a first data exchange bus coupled to said first data input and to said first data output of said storage unit;

a second data exchange bus coupled to said second data input and to said second data output of said storage unit;

a data shift unit, for shifting the alignment of the data fields fed from the exchange buses in accordance with signals from said control unit, providing with a multichannel control input, first, second, third and fourth data inputs and first and second data outputs, said multichannel control input of said data shift unit being coupled to said multichannel output of said control unit, said first data input, said third data input and said first data output of said data shift unit being coupled to said first data exchange bus, and said second data input, said fourth data input and said second data output of said data shift unit being coupled to said second data exchange bus;

a first switch having first and second inputs, a multichannel input and an output, said first input of said first switch being coupled to said first data exchange bus;

a second switch having first and second inputs, a multichannel input and an output, said first input being coupled to said second data exchange bus,

said second input of said first switch and said second input of said second switch being coupled to said second output of said control unit;

a data masking unit, for blanking out insignificant data within a data word, having a control input coupled to said third output of said control unit, a first input coupled to said first data exchange bus, a second input coupled to said second data exchange bus, and a multichannel output coupled to said multichannel inputs of said first and second switches; and

an arithmetic/logic unit, for performing arithmetic and logical operations on said data, having a control input coupled to said fourth output of said control unit, a first input coupled to said output of said first switch, a second input coupled to said output of said second switch, and an output coupled to said input of said storage unit.

4,219,875

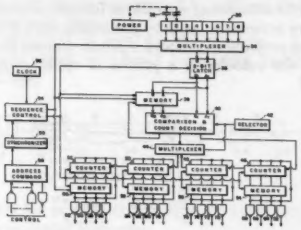
DIGITAL EVENT INPUT CIRCUIT FOR A COMPUTER BASED PROCESS CONTROL SYSTEM

Steven R. Templeton, Phoenix, Ariz., assignor to Honeywell Inc., Minneapolis, Minn.

Filed May 5, 1978, Ser. No. 903,103

Int. Cl.[2] G06F *11/06, 15/46*

U.S. Cl. 364—200 **7 Claims**



1. A digital event counter input circuit for a computer based process control system, said circuit comprising:

a plurality of input circuit means for receiving a plurality of status signals, each representative of the status of an event sensor;

scanning means for sequentially scanning said input circuit means;

first memory means connected to the output of said scanning means for storing said status signals;

comparing means connected to the output of said scanning means and said first memory means for comparing a sensed status of said input signal with the previous status of said input signal stored in said first memory means to detect changes in said input signal as an indication of a countable event and to produce a comparator output signal indicative of such an event;

counting means connected to said comparing means for counting said comparator output signals;

second memory means connected to said counting means for storing the accumulated count in said counting means for a predetermined period;

means to apply external timing and control signals to said event counter input circuit; and output means enabled by said external timing and control signals connected to read out the accumunlated count in said second memory means whereby said accumulated count is representative of an engineering parameter and become an input signal for said computer based process control system.

4,219,876

COMPUTED TOMOGRAPHY USING RADIATION

Hiroyuki Mizutani, Yokohama, and Toshio Uehara, Tokyo, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Filed Jun. 14, 1978, Ser. No. 915,540

Claims priority, application Japan, Jun. 14, 1977, 52-69398

Int. Cl.[2] G01M *23/00*

U.S. Cl. 364—414 **5 Claims**

1. A computed tomography system for reconstructing an

image of a sectional area of a subject, using picture data about picture elements arranged in a matrix to constitute said sectional area, said system comprising:

means provided with a source of radiation beams for projecting radiation beams which transmit through said sectional area in a direction substantially parallel to the plane of said sectional area;

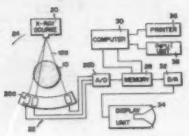
means for rotating said source of radiation beams about said sectional area so as to project said radiation beams onto said sectional area at various scan angles;

means provided with a plurality of detectors for detecting the radiation beams transmitting from said sectional area so as to generate an output signal which corresponds to each of the radiation beams;

means for obtaining a profile of measured projection data from the output signals which correspond to the radiation beams projected to said sectional area at various scan angles, respectively, said profile of measured projection data comprising a plurality of measured projection data which correspond to the radiation beams transmitted to said sectional area at a plurality of projection angles at first sampling intervals ΔX_1;

means for calculating a profile of filtered projection data for every projection angle by processing each profile of measured projection data with a predetermined filter function;

means for calculating a profile of recast projection data



corresponding to said profile of filtered projection data by recasting said profile of filtered projection data, instead of forming a profile of recast projection data, using a plurality of filtered projection data which should be obtained by projecting the radiation beams through said sectional area in a direction determined by said projection angle at second sampling intervals ΔX_2 for recasting which is determined by said projection angle and the pitch length of the picture element arranged in said matrix;

means for calculating interpolated projection data from said profile of recast projection data, using interpolation calculation, instead of from the radiation beams which transmit respectively, through the picture elements of each row of said matrix; and

means for carrying out back projection calculation based on said interpolated projection data obtained for every projection angle, thereby obtaining picture data for each picture element and thus reconstructing the image of said sectional area using such picture data.

4,219,877

SPECIAL-PURPOSE DIGITAL COMPUTER FOR STATISTICAL DATA PROCESSING

Evgeny E. Vladimirov, ulitsa Yaroslava Gasheka, 2, kv. 1; Vladimir G. Korchagin, prospekt Veteranov, 144/21, kv. 202; Jury B. Sadomov, ulitsa Tipanova, 2, kv. 17, and Lev M. Khokhlov, ulitsa Gertsena, 47, kv.10, all of Leningrad, U.S.S.R.

Filed Jan. 16, 1978, Ser. No. 869,518

Int. Cl.[2] **G06F** *7/00, 15/06, 15/36*

U.S. Cl. 364—554 **4 Claims**

1. A special-purpose digital computer for statistical data processing, comprising:

input data lines;

output lines;

a random-number generator, for producing a uniform pseudo-random number sequence, having an input and a multi-channel output;

first and second stochastic data rounding units, for linear conversion of the code into its probability and for stochastic rounding of numbers, each having a first multi-channel input connected to respective input data lines, a second multi-channel input, an input, a multi-channel output, and an output;

third and fourth stochastic data rounding units, for linear conversion of the code into its probability and for stochastic rounding of numbers, each having first and second multi-channel inputs, an input and an output;

a shift register unit having a multi-channel input, an input, and a multi-channel output connected to said multi-channel input of said shift register unit;

a first receiving register having a multi-channel input connected to said multi-channel output of said shift register, an input, and a multi-channel output connected to said first multi-channel input of said third stochastic data rounding unit;

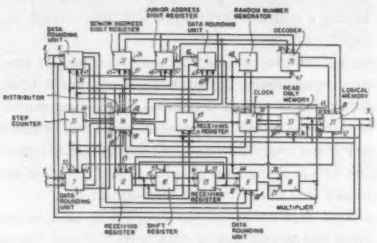
a second receiving register having a multi-channel input, an input, and a multi-channel output connected to said multi-channel input of said shift register unit and to said first multi-channel input of said fourth stochastic data rounding unit;

a third receiving register having a multi-channel input connected to said multi-channel output of said shift register unit, an input, and a multi-channel output connected to said first multi-channel input of said first stochastic data rounding unit;

a single-time step multiplier, for stochastic multiplication of numbers, having a first input connected to said output of said third stochastic data rounding unit, a second input connected to said output of said fourth stochastic data rounding unit, and an output;

a senior address digit register having a multi-channel input, first and second inputs, and a multi-channel output;

a junior address digit register having a multi-channel input,



first and second inputs, a multi-channel output, and an output connected to said first input of said senior address digit register;

a decoder having a multi-channel input connected to said multi-channel outputs of said senior address digit register and of said junior address digit register, an input, and a multi-channel output;

a logical memory, for accumulating and storing data, adding numbers and summing unity increments of numbers, having a first multi-channel input connected to said multi-channel output of said decoder, a second multi-channel input, a third multi-channel input, a first input connected to said outputs of said third and fourth stochastic data rounding units and to said output of said multiplier, and a second input, an output connected to said first input of said junior address digit register, and a multi-channel output connected to said first multi-channel inputs of said logical memory and of said first and second stochastic data rounding units, to said multi-channel input of said first receiving register, and to said output lines;

a read only memory, for storing harmonic functions, "correlation window" functions, logarithmic functions, correlation factors and microinstructions, having a first multi-channel input connected to said multi-channel output of said logical memory, a second multi-channel input, a first

multi-channel output connected to said second multi-channel input of said logical memory, and a second multi-channel output;

a quantization step counter, for determining the value of a quantization amplitude interval, having first and second multi-channel outputs respectively connected to said second multi-channel inputs of said first and second stochastic data rounding unit, and an input;

a clock having a first multi-channel input connected to said second multi-channel output of said read only memory, a second multi-channel input connected to said multi-channel output of said random number generator, a first multi-channel output connected to said second multi-channel input of said read only memory, a second multi-channel output, and an output connected to said inputs of said random number generator, said first, second, third and fourth stochastic data rounding units, said shift register unit, said first, second and third receiving registers, and said decoder and to said second inputs of said senior address digit register, and said junior address digit register, and connected to said third multi-channel input of said logical memory; and

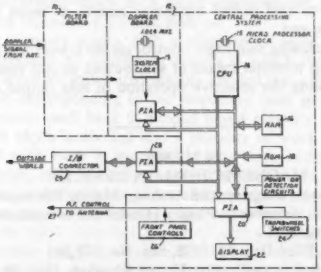
a distributor, for distributing information depending on the operating modes of the special-purpose digital computer, having first and second multi-channel inputs respectively connected to said multi-channel outputs of said first and second stochastic data rounding units, a second multi-channel input connected to said second multi-channel output of said clock, a third multi-channel input connected to said multi-channel outputs of said senior address digit register and said junior address digit register, first and second inputs respectively connected to said outputs of said first and second stochastic data rounding units, a first multi-channel output connected to said second multi-channel inputs of said first, second, third and fourth stochastic data rounding units, a second multi-channel output connected to said multi-channel inputs of said senior address digit register and said junior address digit register, third and fourth multi-channel outputs respectively connected to said multi-channel inputs of said first and second receiving registers, a first output connected to said input of said quantization step counter, and a second output conneced to said second input of said logical memory.

4,219,878

SPEED MEASURING DEVICE

William D. Goodson; John R. Alden, both of Chanute, and David L. Hyder, Overland Park, all of Kans., assignors to Kastom Electronics, Inc., Shawnee Mission, Kans.

Filed Apr. 14, 1978, Ser. No. 896,373
Int. Cl.[2] G01P *3/66*
U.S. Cl. 364—565 **19 Claims**



1. A speed measurement device for calculating and displaying the average speed of an object moving a distance between first and second location, the device comprising:

means for generating a first time base;

means for accumulating time interval information based on said first time base and occurring between a first event corresponding to said first location and a second event corresponding to said second location;

means for supplying information corresponding to said distance between the two locations in appropriate units for calculation;

means for calculating speed by dividing said distance information by said time interval information;

means for displaying said calculated speed of said moving object;

means for generating a second time base;

means for comparing said first and second time bases for determining the existence of a predetermined relationship between them; and

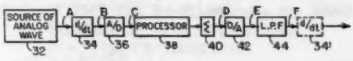
means for controlling the display means in accordance with said predetermined relationship.

4,219,879

DIGITAL TO ANALOG CONVERSION SYSTEM

Neil H. K. Judell, North Kingston, R.I., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 7, 1978, Ser. No. 940,250
Int. Cl.[2] G06G *7/12;* G06J *1/00;* H03K *13/02*
U.S. Cl. 364—602 **6 Claims**



1. A system for processing first analog signals comprising

an analog-to-digital converter,

a digital processor coupled to said converter,

a digital summer coupled to receive the digital output of said processor,

a digital-to-analog converter coupled to the outputof said summer for producing second analog signals, and

means for differentiating one of said first and second analog signals.

4,219,880

SIGNAL-PROCESSING AND CONVERSION SYSTEMS

Charles R. Nichols, Pasadena, Calif., assignor to Quad/Eight Electronics, N. Hollywood, Calif.

Filed May 3, 1978, Ser. No. 902,455
Int. Cl.[2] G06F *15/34;* H03K *13/02*
U.S. Cl. 364—718 **10 Claims**

1. A system for processing signals, comprising:

computation means for receiving said signals and for producing processed signals by carrying out operations in accordance with control information for controlling operations of said computation means and operand information to be operated on by said computation means; and

controller means for storing said control information and said operand information and for providing signals representative of said control information and said operand information, said controller means including,

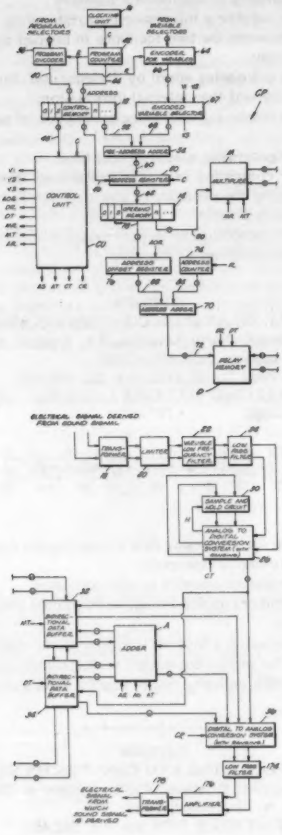
control memory means coupled to said computation means and having a plurality of addressable information storage locations for storing said control information,

control member addressing means for providing to said control memory means signals for addressing said storage locations in said control memory means for said providing by said control memory means,

operand memory means coupled to said computation means and having a plurality of addressable information storage locations for storing said operand information, and

operand memory addressing means for, concurrently with said providing by said control memory addressing

means, providing signals to said operand memory means for addressing said storage locations in said operand memory means for said providing by said operand memory means.



4,219,881

DIGITAL INPUT CONTROL CIRCUIT

Lowell D. Wilske, Phoenix, Ariz., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 30, 1977, Ser. No. 866,000

Int. Cl.[3] G06F *11/00*

U.S. Cl. 364—900 **5 Claims**

1. A digital computer based process control system including a digital data input control circuit and digital computer means for supplying digital control signals to and receiving digital data signals from said data input control circuit, said digital data input control circuit comprising:

a plurality of digital data input terminal means for receiving digital data from process sensors:

a plurality of input signal conditioning circuits corresponding in number to said plurality of input terminal means, individual ones of said input terminal means being connected respectively to an input of corresponding ones of said input signal conditioning circuits;

a plurality of holding latch elements corresponding in number to the plurality of said input signal conditioning circuits, said holding latch elements each having an independent input and output means;

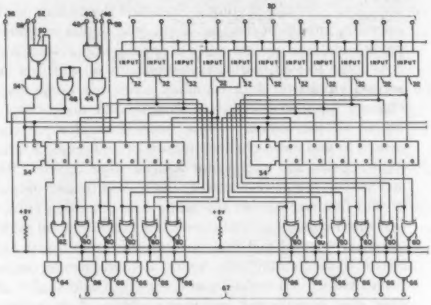
a signal change detector including a plurality of signal comparator means each having a first and a second input means corresponding in number to said plurality of input signal conditioning circuits and each having an output means to produce an output signal indicative of a difference in the signals applied to the corresponding first and second input means thereof;

means connecting said output means of said signal change detector to said computer means to initiate a control signal therefrom;

means connecting the output of each of said input signal conditioning circuits to said input means of corresponding ones of said holding latch elements;

means also connecting the output of each of said input signal conditioning circuits to corresponding ones of said first input means of said comparator means;

means connecting said output means of each of said holding latch means to corresponding ones of said second input means of said comparator means;



signal responsive logic control means, responsive to said control signal, connected for controlling the selective operation of said holding latch means;

said logic control means including means connected to be responsive to address signals and function control derived from control signals supplied by said computer means;

a plurality of selectively operable output circuit means corresponding in number to said data input terminal means each having an input terminal means, an enabling terminal means and an output terminal means;

means connecting said input terminal means of each of said output circuits means to corresponding ones of said output means of said holding latch elements and means connecting said output terminal means of said output circuit means to said digital computer means, as input signals thereto; and

means including said logic control means connected to said enabling terminal means of said output circuit means for controlling the selective operation of said output circuit means.

4,219,882

MAGNETIC DOMAIN DEVICES

Paul V. Cooper, Kingsley, and Anthony Marsh, Blisworth, both of England, assignors to Plessey Handel und Investments AG, Zug, Switzerland

Filed Dec. 22, 1978, Ser. No. 972,361

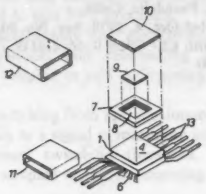
Claims priority, application United Kingdom, Dec. 29, 1977, 54080/77

Int. Cl.[2] G11C *19/08, 5/04*

U.S. Cl. 365—2 **7 Claims**

1. A magnetic domain device having a pair of orthogonally disposed coils one inside the other with a device chip disposed

in the centre of both of the coils and flexible substrate means to which the device chip is directly or indirectly attached, the



flexible substrate means being suitably shaped and folded so that it extends between said coils and enables external electrical connection to be made to the device chip.

4,219,883

CACHE MEMORY CONTROL SYSTEM

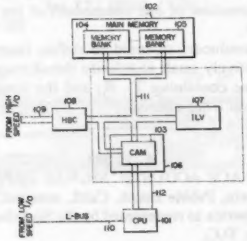
Yoshiuki Kobayashi, Kokubunji, and Takashi Rokutanda, Iachikawa, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 22, 1979, Ser. No. 22,950

Claims priority, application Japan, Mar. 30, 1978, 53/36090

Int. Cl.[2] G11C *13/00*

U.S. Cl. 365—189 **4 Claims**



1. A cache memory control system for a data processing system with a memory system to be accessed by a central processing element and a high speed bus control circuit, comprising:

main memory means with a plurality of word locations addressable by addressing spectra in which the entire of the word locations are logically divided into a plurality of banks, each bank is divided into a plurality of blocks, each block is divided into a plurality of word locations, and each bank is specified by a bank address in the addressing spectra each block by a block discriminator and, each word location by a block address;

cache memory means with a plurality of word locations addressable by addressing spectra in which the entire of the word locations are logically divided into a plurality of bank corresponding to the respective bank in said main memory, each bank is divided into a plurality of blocks, each block is divided into a plurality of work locations, and each bank is specified by the bank address in the spectra, each block by the block discriminator, and each word location by the block address;

random access director memory means which is addressable by the bank address, is provided with a plurality of work locations corresponding to the banks in said cache memory, and loads the block discriminators of a plurality of blocks in the corresponding banks stored in said cache memory; a cache memory address bus connecting to said central processing element, said high speed bus control circuit, said cache memory and said directory memory, for transferring the address information of the fetch request produced by the processing element or the high speed bus control circuit;

comparing means connecting to said directory memory and said address bus, which said comparing means compares a plurality of discriminators read out from said directory memory in response to the bank address of the fetch request with the block discriminator of the fetch request to produce coincident or not-coincident signal for indicating whether the word to be fetched is stored in said cache memory;

encoder means connecting to said comparing means for encoding the coincident not-coincident signals;

a multiplexer connecting to said encoder for selecting said encoder signal;

control ROM means connecting to said priority register for applying to said directory memory the directory memory bank information to which data is to be loaded, in response to the output signal from said priority register;

and zero detecting means connecting to said address register for prohibiting block transfer from said main memory to said cache memory when memory address information fed from said address register specifies a fixed area in said main memory.

4,219,884

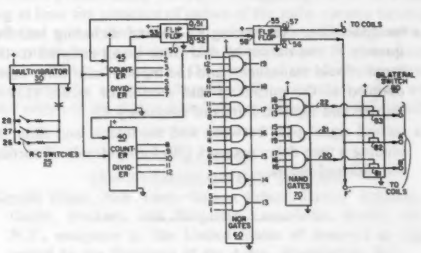
APPARATUS FOR CONTROLLING INSECTS

Albert DeSantis, 7929 NW. 3rd Pl., Margate, Fla. 33063

Filed Jan. 29, 1979, Ser. No. 7,583

Int. Cl.[3] H04B *1/02*

U.S. Cl. 367—139 **12 Claims**



1. Apparatus for generating random ultrasonic noise comprising

an electrical power source,

means for generating at least one digital signal connected to said power source,

means for dividing said digital signal into a plurality of different digital signals having discrete pulses of varying duration and varying intervals between said pulses, said dividing means being operatively connected to said signal generating means; and

at least one coil means having a metal core with primary and secondary windings being wrapped around said metal core for producing random high frequency noise said coil means being operatively connected to said dividing means.

4,219,885

SONAR TARGET SIMULATOR

Claude C. Routh; Keith E. Geren, both of San Diego; Peter Huisveld, Jr., National City, all of Calif., and Milton D. Papineau, Kailoa, Hi., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 8, 1964, Ser. No. 395,101

Int. Cl.[2] G09B *9/00*

U.S. Cl. 367—1 **5 Claims**

1. A system for simulating wave reflections from an irregu-

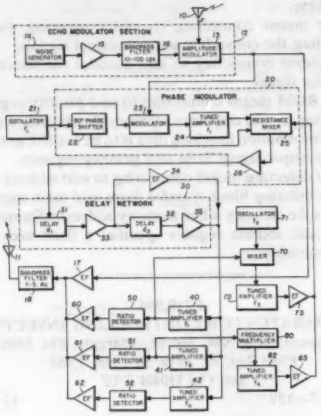
lar-shaped moving object which has been illuminated with energy of frequency F, said system comprising:

a receiver (**10**) for said frequency F;

a generator (**14**) of white noise voltage;

means (**13**) for amplitude modulating frequency F with said white noise voltage to generate random bursts of frequency F;

a radiating transducer (**11**);



a bandpass filter (**18**) having a passband including said frequency F, the output of said filter being coupled to the input of said transducer, and the input of said filter being coupled to the output of said modulator means (**13**) to radiate said random bursts of frequency F;

a second signal path between said modulator and filter including a time delay network (**30**) for randomly distorting the radiated bursts.

4,219,886

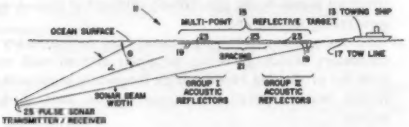
MULTI-POINT REFLECTIVE TARGET SYSTEM

William B. Anderson, Silverdale, Wash., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 16, 1978, Ser. No. 951,698

Int. Cl.[2] **B06B** *3/04;* **G01S** *9/66*

U.S. Cl. 367—87 **6 Claims**



1. A multipoint reflective target comprising:

(a) a plurality of reflectors;

(b) said plurality of reflectors spaced apart and interconnected by a flexible member;

(c) the number and spacing of said reflectors when elongated are selected to provide a predetermined reflected signal that resembles a predetermined actual target when sonified; whereby

(d) said sonification is achieved by a sonar having a pulse length that is about equal to the length of the elongated plurality of reflectors.

4,219,887

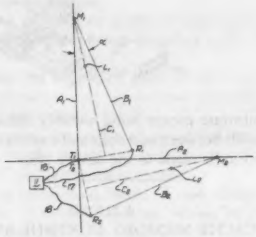
BISTATIC ACOUSTIC WIND MONITOR SYSTEM

Paul B. MacCready, Jr., Pasadena, Calif., assignor to Aerovironment Inc., Pasadena, Calif.

Filed Oct. 4, 1978, Ser. No. 948,322

Int. Cl.[2] **G01S** *9/66;* **G01W** *1/02*

U.S. Cl. 367—90 **31 Claims**



1. In a Doppler acoustic echo sounder system, the combination comprising

(a) a first transmitting transducer T_1 oriented to transmit acoustic beams toward an atmospheric locus of wind moving with velocity characterized by vector V,

(b) a first receiving transducer R_1 oriented to receive acoustic echo beam signals from said locus, for processing to enable detection of one component of the wind velocity vector V,

(c) said transducers oriented to define beam center paths with relatively small angularity therebetween,

(d) the plane containing T_1, R_1 and the beam center paths being tilted from vertical.

4,219,888

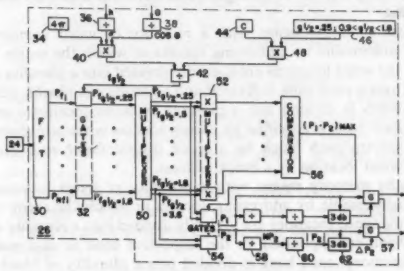
SURFACE ACOUSTIC SIGNAL DEFADER

Herman Medwin, Pebble Beach, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 8, 1978, Ser. No. 967,749

Int. Cl.[2] **H04B** *1/10, 11/00*

U.S. Cl. 367—131 **12 Claims**



1. A surface acoustic signal defader for optimizing reception of surface scattered underwater sound signals comprising:

(a) a directional transducer;

(b) a receiver coupled to the output of said transducer;

(c) an analog-digital converter coupled to the output of said receiver;

(d) a Fast Fourier-Transform (FFT) digital processor coupled to the output of said converter, said processor providing a plurality of data outputs each containing pressure amplitude information of each of a predetermined number of frequencies;

(e) means for determining and processing a plurality of

optimum frequencies within said predetermined number of frequencies from which a maximum pressure amplitude can be derived, said determining and processing means being coupled to said FFT processor;

(f) means for determining and monitoring said maximum pressure amplitude, said determining and monitoring means being coupled to said determining and processing means; and

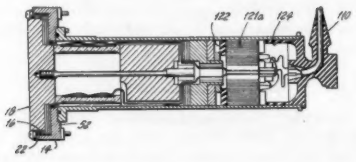
(g) means for switching from said maximum pressure amplitude frequency to a signal of maximum anti-correlation at a predetermined switching threshold, said switching means being coupled to said determining and monitoring means;

whereby optimum reception of surface scattered underwater sound is achieved.

4,219,889
DOUBLE MASS-LOADED HIGH POWER PIEZO-ELECTRIC UNDERWATER TRANSDUCER

Edwin J. Parssinen, Mystic; John F. White, and Sidney Baron, both of New London, all of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 16, 1960, Ser. No. 56,611
Int. Cl.[3] H04R 17/00
U.S. Cl. 367—158 **10 Claims**

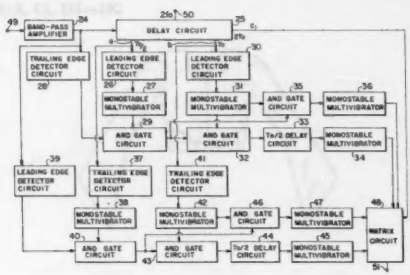


1. An improved underwater transducer comprising a piston of titanium having a planar active face for transfer of sonic wave energy between said piston and the water to which it is exposed, a housing having an opening whose perimeter is slightly larger all around than the perimeter of the piston, said piston being disposed across said opening, and nearly closing said opening with its active face directed outwardly, an elastomeric sealing material bonded to the perimeter of the piston and the perimeter of the housing around the opening and together with the piston completely closing the opening in the housing and with the active face of the piston exposed for contact with sea water, said elastomeric material permitting vibratory reciprocation of said piston relative to said housing and normal to its planar face for transfer of sonic energy between the piston and the water to which it is exposed, an electromechanical energy conversion means supported in the housing and coupled to the piston, said means together with said piston comprise a double mass elastic system and includes an electromechanical transducer element to which is securely and rigidly affixed said piston and another mass with the transducer element therebetween with the piston, the other mass and the transducer element in line and oriented longitudinally of the housing, and an acoustic isolator pressure release material in the form of a stack of paper disposed between the inner end of said other mass and the housing in the direction of relative longitudinal movement therebetween.

4,219,890
DIGITAL SIGNAL REGULATION SYSTEM

Yasumasa Sugihara, Kawasaki, Japan, assignor to The General Corporation, Kanagawa, Japan

Filed Jul. 3, 1978, Ser. No. 921,178
Claims priority, application Japan, Jul. 1, 1977, 52-79246
Int. Cl.[2] H04L 27/08
U.S. Cl. 375—98 **7 Claims**

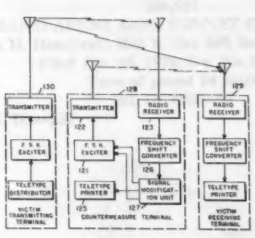


1. A system for regulating an average of amplitudes of a digital signal comprising a train of pulses formed by pulse tops and pulse bottoms which are equally spaced by a given amplitude from a reference level, at least one of the pulse top and the pulse bottom being a pulse variety which is of more than two different pulse widths; the system comprising means for detecting at least the presence of pulses of the pulse variety having a selected one of the pulse widths, means for producing correction pulses having a pulse width which is equal to said selected pulse width in response to the output of the detecting means, and means for algebraically adding the correction pulses with said pulses of the digital signal having the selected pulse width.

4,219,891
COUNTERMEASURES SYSTEM

Gerald Weiss, New York; Gerson Scharf, Bronx; Anthony A. Guido, Yonkers, and Benjamin Lazardwitz, Bronx, all of N.Y., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 5, 1962, Ser. No. 171,320
Int. Cl.[3] H04K 3/00
U.S. Cl. 455—1 **7 Claims**

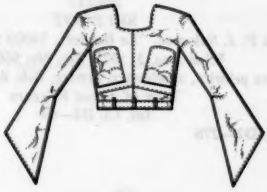


1. A method for jamming frequency-shift-keyed radio teletype signals which comprises: receiving said frequency-shift keyed signals; converting said signals to teletype current pulses; modification of selected ones of said teletype pulses; converting said modified teletype current pulses to frequency shifted signals; and transmitting said converted modified pulses.

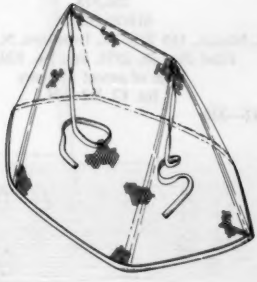
256,512
FROZEN CONFECTION
Calvin E. Sims, 2865 Cloverleaf Dr., Atlanta, Ga. 30316
Filed Aug. 3, 1978, Ser. No. 930,732
Term of patent 14 years
Int. Cl. D01—*01*
U.S. Cl. D1—18

256,513
GIRL'S JUMPER
Doris T. Seymore, Apartment 802A, 600 N. McClung, Chicago, Ill. 60611
Filed Nov. 7, 1977, Ser. No. 849,454
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—81

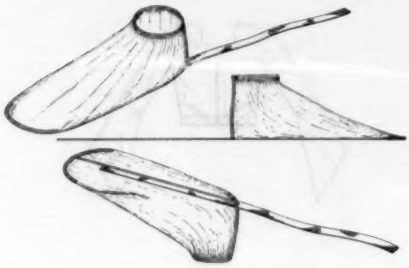
256,514
JACKET
Peter G. Kuran, 9707 Woodley Ave., Sepulveda, Calif. 91343
Filed Feb. 21, 1978, Ser. No. 879,687
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—192



256,515
TRANSPARENT RAIN BONNET OR THE LIKE
Frances H. Honeycutt, Rte. 8, Box 468, Sanford, N.C. 27330
Filed Apr. 24, 1978, Ser. No. 899,646
Term of patent 14 years
Int. Cl. D02—*03*
U.S. Cl. D2—235

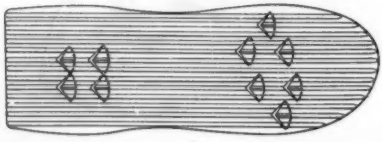


256,516
PROTECTIVE FOOT COVERING
Sylvia S. Michalak, South River, N.J., assignor to Surgikos, Inc., New Brunswick, N.J.
Continuation-in-part of Ser. No. 709,743, Jul. 29, 1976. This application Aug. 17, 1978, Ser. No. 934,431
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—271

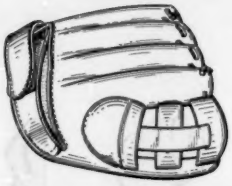


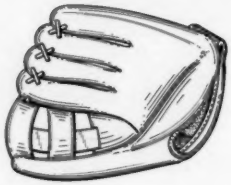
256,517
SKI BOOT
Georges P. J. Salomon, "Le Bordet", 74000 Quintal, France
Filed Aug. 3, 1978, Ser. No. 930,621
Claims priority, application France, Feb. 8, 1978, 78 205
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—276

256,518
SHOE SOLE
Adolph H. Moesle, 161 70th St., Brooklyn, N.Y. 11209
Filed Jun. 28, 1978, Ser. No. 920,218
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—320



256,519
BASEBALL GLOVE
Ira J. Hirsch, 321-26 Spring St., Red Bank, N.J. 07701
Filed May 15, 1978, Ser. No. 905,842
Term of patent 14 years
Int. Cl. D02—*06*
U.S. Cl. D2—361





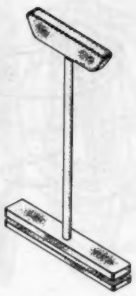
256,520
SKI CARRIER
Joseph B. DiCarlo, and Elinor C. DiCarlo, both of 216 Pomona Ave., Long Beach, Calif. 90803
Filed Jan. 30, 1978, Ser. No. 873,402
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D3—36

256,521

COMBINED HOLDER AND CARRIER FOR ROLLER SKATES

Kenneth H. Bishop, 1844 Strobridge Ave., Castro Valley, Calif. 94546

Filed Mar. 10, 1978, Ser. No. 885,306
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D3—36



256,522

CARRYING CASE FOR CHESS ARTICLES OR THE LIKE

Ralph E. Peterson, 2068 Morley St., Simi Valley, Calif. 93065

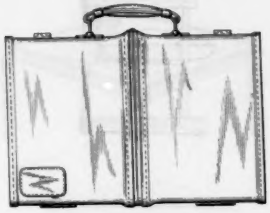
Filed May 11, 1978, Ser. No. 905,113
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—74

256,523

CARRYING CASE FOR BACKGAMMON OR SIMILAR ARTICLE

Abraham I. Tawil, 2234 Ocean Pkwy., Brooklyn, N.Y. 11235

Filed Aug. 4, 1978, Ser. No. 931,118
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—76



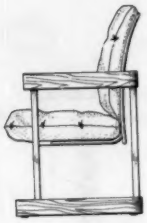
256,524

CLEATED SHOE CLEANING DEVICE

Robert V. Elliott, 8486 Grenache Ct., San Jose, Calif. 95135

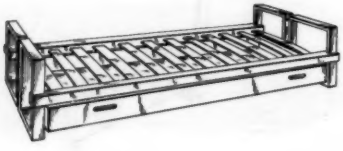
Filed Jul. 24, 1978, Ser. No. 927,740
Term of patent 14 years
Int. Cl. D4—*02*; D7—*05*
U.S. Cl. D4—22

256,525
CHAIR
Louis Schuster, Beverly Hills, Calif., assignor to Contempo Metal Furniture Co. of Calif., Los Angeles, Calif.
Filed Sep. 25, 1978, Ser. No. 945,564
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—69

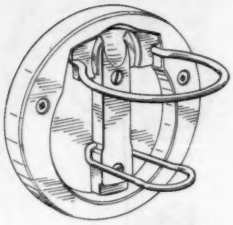


256,526
WATERBED WITH CANOPY
Jerry Johnson, 14010-D Marquesas Way, Marina del Rey, Calif. 90291
Filed Oct. 10, 1978, Ser. No. 949,908
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—82

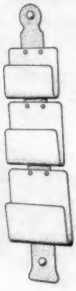
256,527
BED
Paul Guetat, Lyons, France, assignor to Societe Majalone du Meuble S.A. of Meyzieu, France
Filed Apr. 21, 1978, Ser. No. 899,029
Claims priority, application France, Jan. 11, 1978, 78 283
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—83



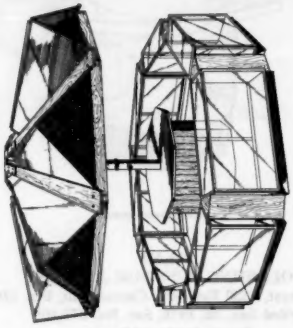
256,528
COLLAPSIBLE HOLDER FOR A CONTAINER
William Ormond, 233 Hillcrest Ave., Hamilton, L8P 2X3, Ontario, Canada
Filed May 1, 1978, Ser. No. 901,727
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—130



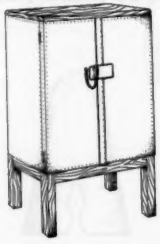
256,529
HANGING MAGAZINE RACK OR THE LIKE
John O. Van Koert, 190 E. 72nd St., New York, N.Y. 10021
Filed Sep. 23, 1977, Ser. No. 836,200
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—131



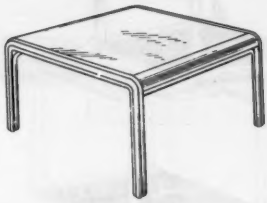
256,530
KIOSK
David J. Johnson, Muskegon, Mich., assignor to Studio One Services, Inc., Mich.
Filed Dec. 15, 1978, Ser. No. 969,921
Term of patent 14 years
Int. Cl. D6—*04*; D25—*03*
U.S. Cl. D6—144



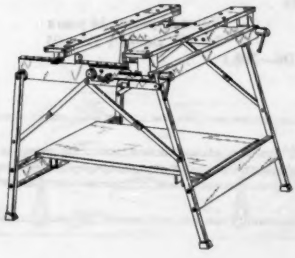
256,531
CABINET OR THE LIKE
John P. Van Koert, 190 E. 72nd St., New York, N.Y. 10021
Filed Sep. 23, 1977, Ser. No. 836,003
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—167



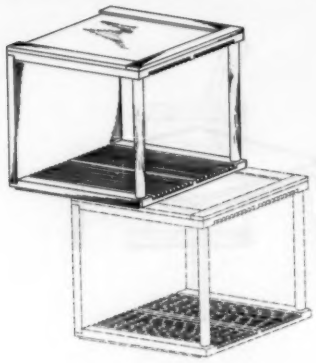
256,532
TABLE
Gae Aulenti, Milan, Italy, assignor to Knoll International, Inc., New York, N.Y.
Filed Aug. 25, 1977, Ser. No. 827,609
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



256,533
PORTABLE WORKBENCH
Lorenzo E. Alessio, Lecco, Italy, assignor to Black & Decker Inc., Newark, Del.
Filed Feb. 22, 1978, Ser. No. 880,251
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—178

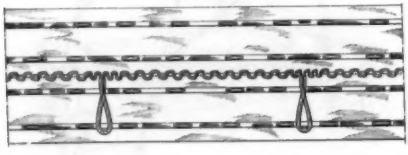


256,534
MODULAR RECORD RACK
Jon W. Bugos, 810 E. 260th St., Euclid, Ohio 44132
Filed Dec. 8, 1978, Ser. No. 960,114
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—185

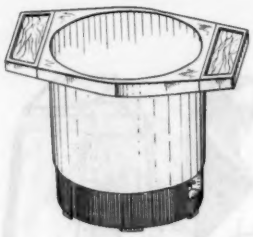


256,535
SPINAL SUPPORT CUSHION
Harold E. Martin, 12 Clark St., New Castle, Pa. 16102
Filed Aug. 2, 1978, Ser. No. 930,595
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—201

256,536
CURTAIN PLEATING TAPE
Reginald C. Atkins, Wolverhampton, England, assignor to Spantape Services Limited, Stockport, England
Filed Oct. 13, 1978, Ser. No. 951,289
Claims priority, application United Kingdom, Sep. 8, 1978, 986286/78
Term of patent 14 years
Int. Cl. D6—*10*; D5—*05*
U.S. Cl. D6—208.1

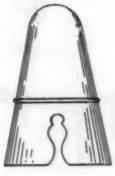


256,537
DEEP FRYER
William J. Rakocy, Nutley, and Masao Tsuji, North Plainfield, both of N.J., assignors to North American Philips Corporation, New York, N.Y.
Filed Oct. 3, 1977, Ser. No. 838,938
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—94

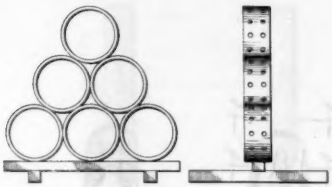


256,538
POLISHING BUFF FOR JEWELRY
Jasper H. Ernest, 1350 Tate Rd., Cautoument, Fla. 32533
Filed Jan. 30, 1978, Ser. No. 873,405
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—161

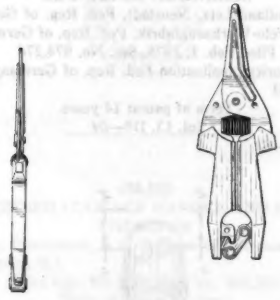
256,539
CLOTHES PIN
Clive E. Joseph, 1 Church Sq., St. Kilda, Victoria, Australia (3182)
Filed Oct. 2, 1978, Ser. No. 947,697
Claims priority, application Australia, Apr. 11, 1978, 74452/78; Aug. 30, 1978, 75709/78
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—198



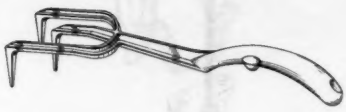
256,540
NEWSPAPER BURNING GRATE
Carmine Conti, 790 Albermarle St., Wyckoff, N.J. 07481
Filed Aug. 10, 1978, Ser. No. 932,683
Term of patent 14 years
Int. Cl. D7—*08;* D6—*04*
U.S. Cl. D7—207



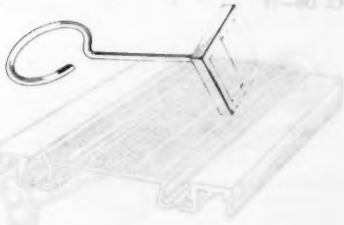
256,541
CUTTING TOOL
Peter O. Davies, Auckland, New Zealand, assignor to Tullen Industries Limited, Auckland, New Zealand
Filed May 22, 1978, Ser. No. 908,410
Term of patent 14 years
Int. Cl. DC8—*03*
U.S. Cl. D8—5



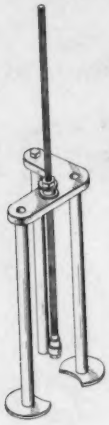
256,542
CULTIVATOR FORK
Edward A. Nadle, Los Angeles, Calif., assignor to Enco Die Casting Co.
Filed Jul. 3, 1978, Ser. No. 921,603
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—13



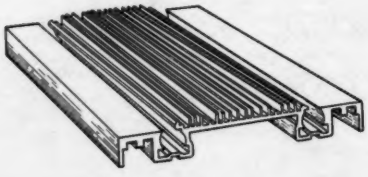
256,543
CANNING LID LIFTER
William George, 695 Kleppe La., Sparks, Nev. 89431
Filed Dec. 8, 1975, Ser. No. 638,460
Term of patent 14 years
Int. Cl. D07—*99;* D13—*99*
U.S. Cl. D8—40



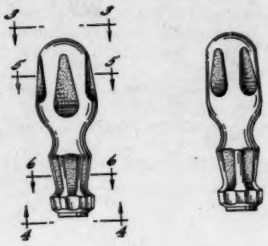
256,544
WASHER SPIN TUBE PULLER
Grant F. Hintze, P.O. Box 4951, El Monte, Calif. 91733
Filed Feb. 7, 1978, Ser. No. 875,766
Term of patent 3½ years
Int. Cl. D08—*05*
U.S. Cl. D8—51



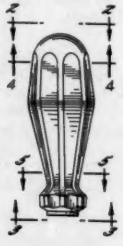
256,545
MITER PLATE
Bengt E. Legerius, and Stig A. Löfving, both of Nyköping, Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden
Filed Jun. 29, 1978, Ser. No. 920,227
Claims priority, application Sweden, Jan. 24, 1978, 780197
Term of patent 3½ years
Int. Cl. D8—*05*
U.S. Cl. D8—71



256,546
SCREWDRIVER HANDLE
Horst W. Holland-Letz, Neustadt, Fed. Rep. of Germany, assignor to Felo-Werkzeugfabrik, Fed. Rep. of Germany
Filed Feb. 1, 1978, Ser. No. 874,274
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1977, 7726665[U]
Term of patent 14 years
Int. Cl. D8—*04*
U.S. Cl. D8—83



256,547
SCREWDRIVER HANDLE
Horst W. Holland-Letz, Neustadt, Fed. Rep. of Germany, assignor to Felo-Werkzeugfabrik, Fed. Rep. of Germany
Filed Feb. 1, 1978, Ser. No. 874,276
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1977, 7726661
Term of patent 14 years
Int. Cl. D8—*04*
U.S. Cl. D8—83



256,548

LETTER OPENER

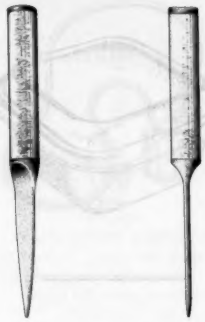
Jerome A. Grunstad, 1910 Oakdale Ave., Apt. 304, West St. Paul, Minn. 55118, assignor to Ketcham & McDougall, Inc., Roseland, N.J.

Filed Apr. 3, 1978, Ser. No. 893,091

Term of patent 14 years

Int. Cl. D8—*03*

U.S. Cl. D8—102



256,549

VOLUME ADJUSTMENT KNOB FOR POWER MICROPHONE

Kenneth W. Maurin, Fraser, Mich., assignor to Ken-Herr & Associates, Southfield, Mich.

Filed Jan. 30, 1978, Ser. No. 873,380

Term of patent 3½ years

Int. Cl. D8—*06*

U.S. Cl. D8—312

256,550

COMBINED LUGGAGE HANDLE AND STUDS THEREFOR

Sol Koffler, Providence, R.I., assignor to American Tourister, Inc., Warren, R.I.

Filed Oct. 10, 1978, Ser. No. 950,240

Term of patent 14 years

Int. Cl. D8—*06*

U.S. Cl. D8—317

256,551

DOOR LOCKING CHAIN

Clay M. Webb, 1005 E. Mariposa, Phoenix, Ariz. 85014

Filed Jul. 31, 1978, Ser. No. 929,687

Term of patent 14 years

Int. Cl. D8—*07*

U.S. Cl. D8—340

256,552

WALL ANCHOR

Anthony S. Rowinski, Bloomfield Hills, Mich., assignor to U.S. Engineering Co. Inc., Muncie, Ind.

Filed Mar. 17, 1978, Ser. No. 887,984

Term of patent 14 years

Int. Cl. D8—*08*

U.S. Cl. D8—385

256,553

SCREW LOCK ASSEMBLY

Paul R. Fayle, P.O. Box 1121, Lexington, Va. 24450

Filed Mar. 11, 1976, Ser. No. 665,745

Term of patent 14 years

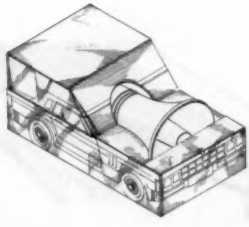
Int. Cl. D8—*08*

U.S. Cl. D8—387

256,554
BOTTLE OR SIMILAR ARTICLE
Ted L. Beaver, Roselle, Ill., assignor to Demert & Dougherty, Inc., Chicago, Ill.
Filed Jul. 10, 1978, Ser. No. 922,932
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—68

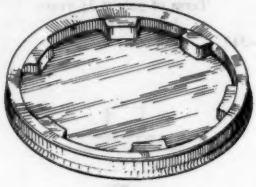
256,555
BOTTLE OR SIMILAR ARTICLE
Everett C. Beeman, Wallingford, Conn., assignor to Monsanto Company, St. Louis, Mo.
Filed Jun. 1, 1978, Ser. No. 911,655
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—116

256,556
AUTOMOBILE ALARM PACKAGE
Darrell D. Fish, Timonium, Md., assignor to Universal Security Instruments, Inc., Owings Mills, Md.
Filed Sep. 25, 1978, Ser. No. 945,557
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—193



256,557
PACKAGING CONTAINER
Yoshitaka Ikushima, Machida, and Isao Ozawa, Tokyo, both of Japan, assignors to Aoba Shigyo Company, Limited and Mizuno Shigyo Company, Limited, both of, Japan
Filed Jan. 18, 1978, Ser. No. 870,522
Claims priority, application Japan, Sep. 20, 1977, 52-37183
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219

256,558
CONTAINER CLOSURE OR THE LIKE
Ernest L. Smith, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Apr. 6, 1978, Ser. No. 894,067
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—267

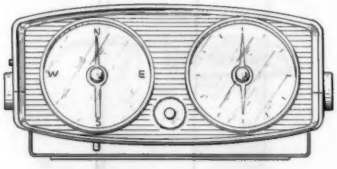


256,559
DESK CLOCK
Raymond E. Cross, Lake Forest, Ill., assignor to Federal Research Corporation, Chicago, Ill.
Filed Jul. 3, 1978, Ser. No. 921,357
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—22

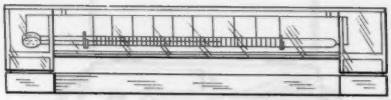
256,560
PENDANT WATCH
Bruno N. van Eyben, 2, Deken de Wijstraat, Boxtel, Netherlands
Filed Oct. 30, 1978, Ser. No. 956,306
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—30

256,561
WRIST WATCH
Keizo Muramatsu, 2-30-9, Hatsudai, Shibuya-ku, Tokyo, Japan
Filed Jul. 31, 1978, Ser. No. 929,436
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—39

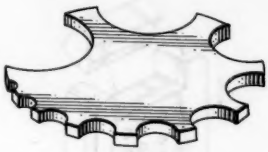
256,562
DIRECTION AND TEMPERATURE INDICATOR CASE AND MOUNT THEREFOR
Marvin Cooper, New Rochelle, N.Y., assignor to Dynamic Classics, Ltd., New York, N.Y.
Filed Jun. 22, 1978, Ser. No. 918,287
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—53



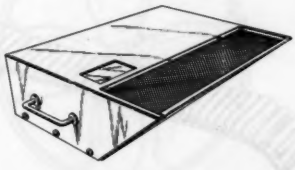
256,563
MAGNETIC AQUARIUM THERMOMETER
Marvin A. Goldman, Great Neck; Jerome N. Goldman, New York, both of N.Y.; Silvio J. Di Marchi, Wyckoff, N.J., and Arthur Gilmore, Greenlawn, N.Y., assignors to Penn-Plax Plastics, Inc., Garden City, N.Y.
Filed Jun. 8, 1978, Ser. No. 913,850
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—58



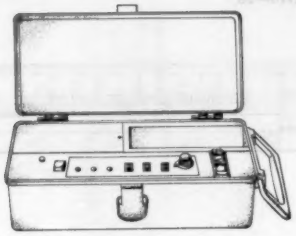
256,564
STRAND AND ROD GAUGE
Russell E. Johns, 455 Rowland Blvd., Novato, Calif. 94947
Filed Jun. 29, 1978, Ser. No. 920,370
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—64



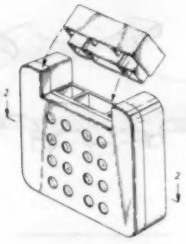
256,565
PLANE MEASURING INSTRUMENT
Lars A. Bergkvist, Gottne, 890 42 Mellansell, Sweden
Filed May 12, 1978, Ser. No. 905,565
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—69



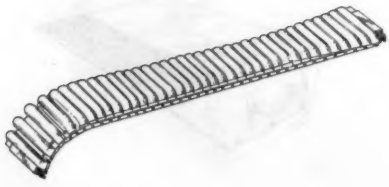
256,566
ALARM SYSTEM TESTER
Henry K. Zephir, 28 Eastwood Dr., Wilbraham, Mass. 01095, and Winthrop E. Wilson, 37 Clifton St., Worcester, Mass. 01610
Filed Jul. 27, 1978, Ser. No. 928,841
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—78



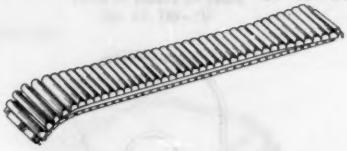
256,567
POOL WATER TESTER
Cay-Peter Voss, Hagen-Berchum, and Manfred Nowak, Lünen, both of Fed. Rep. of Germany, assignors to Tintometer GmbH, Dortmund, Fed. Rep. of Germany
Filed Nov. 17, 1977, Ser. No. 852,604
Claims priority, application Fed. Rep. of Germany, May 26, 1977, 7716628
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—81



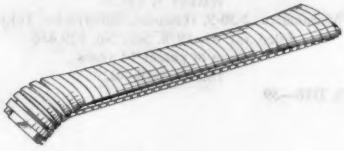
256,568
FLEXIBLE WRIST BAND
Lonas S. Young, 9760 E. Rosewood, Tucson, Ariz. 85710
Filed Oct. 5, 1978, Ser. No. 948,984
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—25



256,569
FLEXIBLE WRIST BAND
Lonas S. Young, 9760 E. Rosewood, Tucson, Ariz. 85710
Filed Oct. 5, 1978, Ser. No. 948,992
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—25

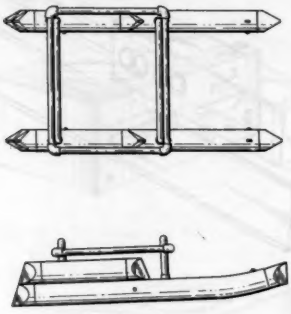


256,570
FLEXIBLE WRIST BAND
Lonas S. Young, 9760 E. Rosewood, Tucson, Ariz. 85710
Filed Oct. 5, 1978, Ser. No. 948,985
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—25



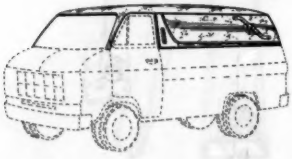
256,571
WALL PLAQUE
Harold L. Gariety, 4295 E. Mexico Ave., Denver, Colo. 80222
Filed Aug. 21, 1978, Ser. No. 935,737
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—140

256,572
CATAMARAN HULL
Paul F. Jedzinski, 78 Portland Rd., Holland Park, London W.11, England
Filed May 1, 1978, Ser. No. 901,977
Claims priority, application United Kingdom, Nov. 3, 1977, 982154/77
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—64

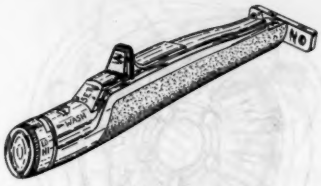


256,573
MOTOR HOME
Eugene E. Breinholt, 1447 Roosevelt Ave., Salt Lake City, Utah 84105
Filed Aug. 25, 1978, Ser. No. 936,904
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—100

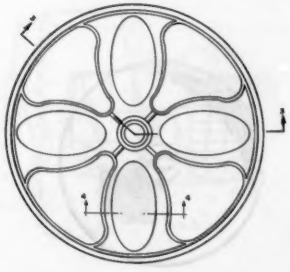
256,574
VEHICLE TOP
Ralph E. Lloyd, 3750 Atlanta Hwy., Athens, Ga. 30601
Filed May 10, 1978, Ser. No. 904,630
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156



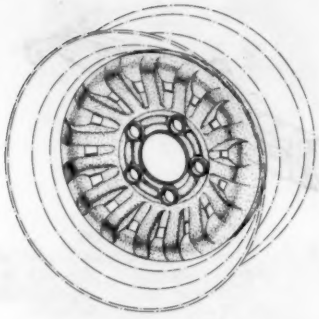
256,575
STEERING COLUMN MOUNTABLE CONTROL STALK
Michael G. Moore, Rochester, Mich., assignor to Chrysler Corporation
Filed Jul. 17, 1978, Ser. No. 925,651
Term of patent 7 years
Int. Cl. D12—*16*
U.S. Cl. D12—174



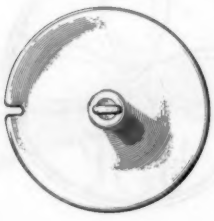
256,576
BICYCLE WHEEL OR SIMILAR ARTICLE
Byron W. Koch, Toledo, Ohio, assignor to NL Industries, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 906,320, May 15, 1978, abandoned. This application Jun. 6, 1979, Ser. No. 45,985
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—209



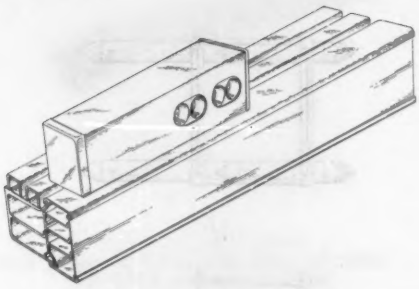
256,577
WHEEL CENTER
Merlyn R. Reppert, E. Rancho Palos Verdes, and Paul J. Mochel, Studio City, both of Calif., assignors to W. R. Grace & Co.
Division of Ser. No. 819,186, Jul. 26, 1977, Pat. No. Des. 252,924. This application May 11, 1979, Ser. No. 39,042
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—211



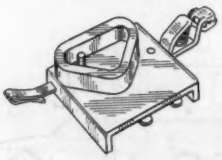
256,578
FILLABLE ANCHOR
Gary R. Oberg, and James T. Rumbaugh, both of Spirit Lake, Iowa, assignors to Berkley and Company, Inc., Spirit Lake, Iowa
Filed Mar. 16, 1978, Ser. No. 887,456
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—215



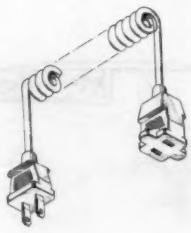
256,579
CHANNEL SYSTEM FOR ELECTRIC CONDUCTORS
Bengt E. Legerius, Nyköping, and Peter L. Maddock, Stockholm, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden
Filed Mar. 7, 1977, Ser. No. 774,789
Claims priority, application Sweden, Sep. 8, 1976, 7617440
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—13



256,580
ADAPTER FOR USE IN TESTING AN ALTERNATOR OR THE LIKE
Brian N. Tichy, Bloomington, Minn., assignor to Thexton Manufacturing Company, Minneapolis, Minn.
Filed Mar. 21, 1978, Ser. No. 888,546
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—24



256,581
ELECTRICAL EXTENSION CORD
Jean-Jacques Bartin, 38 Ave. Niel, 75017 Paris, France
Filed Jul. 28, 1978, Ser. No. 930,586
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—24

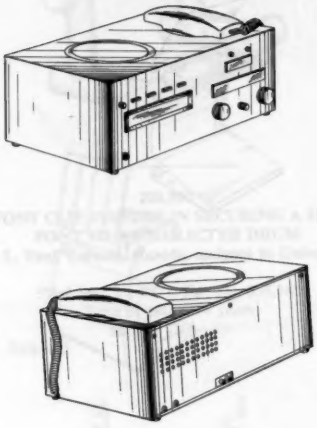


256,582

COMBINATION CASSETTE TAPE PLAYER, RADIO RECEIVER AND TELEPHONE SET

Tommie L. Owens, c/o Mrs. Joyce F. Rathburn 1220 Fair Oaks Dr., Irving, Tex. 75060

Filed Mar. 23, 1978, Ser. No. 889,603
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—5

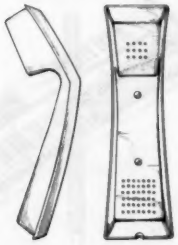


256,583

HANDSET FOR A TELEPHONE INSTRUMENT

Anthony M. Marshall, 30 Lakeshore Rd., Apt. 1009, Pointe Claire, Quebec, Canada

Filed Jul. 14, 1978, Ser. No. 924,868
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—63

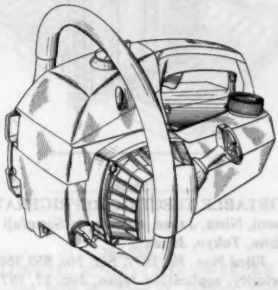


256,584

POWER CHAIN SAW ENGINE ASSEMBLY

Lloyd H. Tuggle, and Michael Baker, both of Shreveport, La., assignors to Bea'rd-Poulan Division of Emerson Electric Co., Shreveport, La.

Filed Sep. 14, 1977, Ser. No. 833,399
Term of patent 14 years
Int. Cl. D15—*01;* D8—*03*
U.S. Cl. D15—1

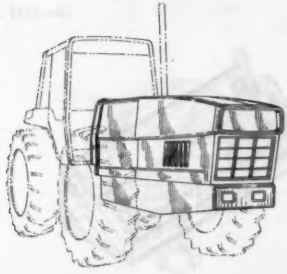


256,585

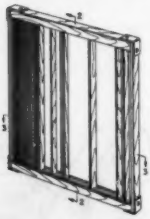
FRONT END UNIT FOR A TRACTOR

Robert A. Skyer, Palatine, and George E. Bowman, Country Club Hills, both of Ill., assignors to International Harvester Company, Chicago, Ill.

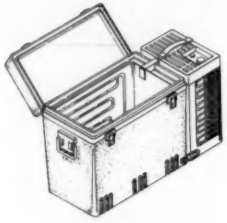
Continuation-in-part of Ser. No. 5,051, Jan. 22, 1979. This application Jun. 18, 1979, Ser. No. 49,262
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—31



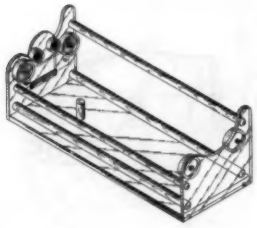
256,586
CLOTH PLEATER
LaVonne Nye, Coal Valley, Ill., assignor to B & B Miniatures, Coal Valley, Ill.
Filed Jan. 24, 1978, Ser. No. 871,915
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D15—66



256,587
PORTABLE ELECTRIC REFRIGERATOR
Norio Tatsumi, Nitta, Japan, assignor to Sawafuji Denki Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 30, 1977, Ser. No. 855,956
Claims priority, application Japan, Jun. 17, 1977, 52023669
Term of patent 14 years
Int. Cl. D15—*07*
U.S. Cl. D15—83

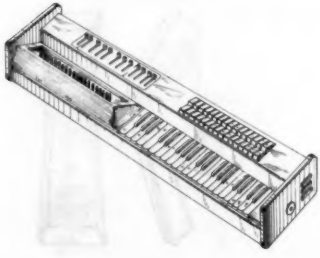


256,588
CYLINDER MOUNTING DEVICE FOR ELECTRONIC SCANNER USED IN PHOTOGRAPHIC REPRODUCTION
Robert J. Mahiques, 731 Parker Blvd., Buffalo, N.Y. 14223, and Robert A. Dixon, 443 Allenhurst Rd., Amherst, N.Y. 14226
Filed Oct. 5, 1978, Ser. No. 948,962
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—32

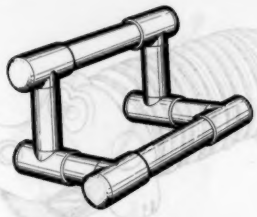


256,589
MAGNIFYING VIEWER
Masahiro Iwashita, 2-9-19, Shibazaki-cho, Tachikawa-shi, Tokyo, Japan
Filed Apr. 6, 1978, Ser. No. 893,997
Term of patent 14 years
Int. Cl. D16—*08*
U.S. Cl. D16—56

256,590
KEYBOARD FOR ELECTRONIC ACCORDION
Franco Orlandoni, Union City, N.J., assignor to FM Musical Instruments, Inc.
Filed Jan. 18, 1978, Ser. No. 870,278
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D17—4



256,591
PERCUSSION MUSICAL INSTRUMENT
Errol A. DeBose, 732 Delachaise St., New Orleans, La. 70115
Filed Sep. 29, 1977, Ser. No. 837,757
Term of patent 14 years
Int. Cl. D17—*04*
U.S. Cl. D17—22

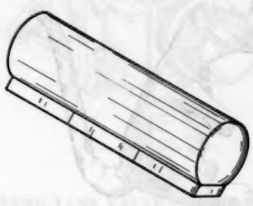


256,592
FILM FONT CLIP FOR USE IN SECURING A FLEXIBLE FONT TO A CHARACTER DRUM
Thomas L. Faul, Toronto, Canada, assignor to Universal Fonts Inc.
Filed Sep. 21, 1977, Ser. No. 835,162
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D18—22

256,593
BALL POINT PEN
Luigi Massoni, and Dino Pelizza, both of Cermenate, Italy, assignors to Nazareno Gabrielli S.p.A., Tolentino, Italy
Filed Jan. 3, 1978, Ser. No. 866,232
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—49

256,594
BACKGAMMON BOARD OR SIMILAR ARTICLE
Abraham I. Tawil, 2234 Ocean Pkwy., Brooklyn, N.Y. 11235
Filed Aug. 4, 1978, Ser. No. 931,119
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—15

256,595
MAGNETIC BINGO CHIP SWEEPER
Alexander Carrillo, 9405 Brockton St., Detroit, Mich. 48211
Filed May 8, 1978, Ser. No. 903,999
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—48



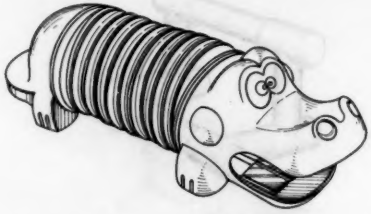
256,596
BUBBLE-MAKING TOY FOR BICYCLES
Jack R. Herron, 1740 Brookside Ave., Oxnard, Calif. 93030
Filed Jul. 3, 1978, Ser. No. 921,481
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—61

256,597
TOY SKUNK
Patricia I. Holstine, 16 N. Main, Conrad, Mont. 59425
Filed Aug. 14, 1978, Ser. No. 933,730
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—148

256,598
TOY ANIMAL FIGURE
Marjorie A. Carson, 2706 W. Coyle, Chicago, Ill. 60645
Filed Oct. 16, 1978, Ser. No. 951,406
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—148

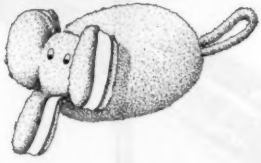
256,599
TOY HIPPOPOTAMUS
Steven R. D'Aguanno, Greenville, R.I., assignor to Hasbro Industries, Inc., Pawtucket, R.I.
Filed Nov. 27, 1978, Ser. No. 965,251
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—157

256,600
TOY ALLIGATOR
Bonnie D. Zacherle, Norwood, Mass., assignor to Hasbro Industries, Inc., Pawtucket, R.I.
Filed Nov. 27, 1978, Ser. No. 965,253
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—157



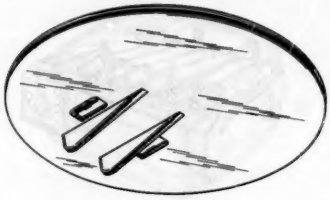
256,601
TOY BIRD
Bonnie D. Zacherle, Norwood, Mass., assignor to Hasbro Industries, Inc., Pawtucket, R.I.
Filed Nov. 27, 1978, Ser. No. 965,252
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—160

256,602
STUFFED TOY
Hilda A. Adelson, 5727 Harvest Hill, Suite 2043, Dallas, Tex. 75230
Filed Feb. 5, 1979, Ser. No. 9,300
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—162

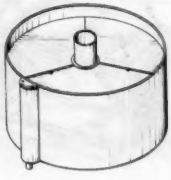


256,603
SKI
Hennoch Geyer, Munich, Fed. Rep. of Germany, assignor to Trak Incorporated, Ward Hill, Mass.
Filed Mar. 16, 1978, Ser. No. 887,196
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—229

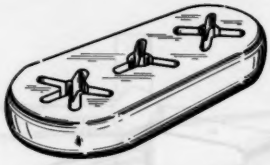
256,604
SURFING HANDBOARD FOR AQUATIC ACTIVITIES
Brian H. Arzoian, 430 Nolan Ave., Glendale, Calif. 91202
Filed Jun. 23, 1977, Ser. No. 809,406
Term of patent 3½ years
Int. Cl. D21—*02*
U.S. Cl. D21—236



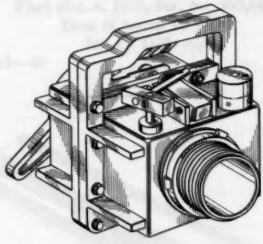
256,605
LIVE BAIT WELL
Karl W. Corby; William H. Ogden, III, both of Ocean Reef Club, Key Largo, Fla. 33037, and Harold London, 11141 SW. 40th Ct., Davie, Fla. 33328
Filed Aug. 8, 1978, Ser. No. 932,039
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—22



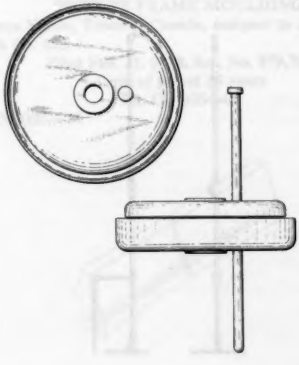
256,606
ARROWHEAD REMOVER
Anthony J. Hoggard, Indian River, Mich., assignor to Tomar Corporation, Harbor Springs, Mich.
Filed May 11, 1978, Ser. No. 905,114
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—99



256,607
FIRE HYDRANT VALVE
Jack M. Carlin, R.F.D. Box 135, Del Mar, Calif. 92014
Filed Jan. 3, 1978, Ser. No. 866,551
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19

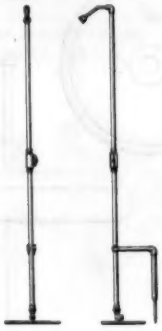


256,608
FLUSH TANK VALVE CLOSER FLOAT
Walter Makhobey, 3109 E. Caley Ave., Littleton, Colo. 80121
Filed Jun. 7, 1978, Ser. No. 913,489
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—33

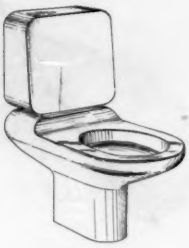


256,609
BIDET
Andre Primault, Garches, France, assignor to Societe Generale de Fonderie, Paris, France
Filed Oct. 23, 1978, Ser. No. 953,544
Claims priority, application France, Apr. 21, 1978, 78 76506
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—51

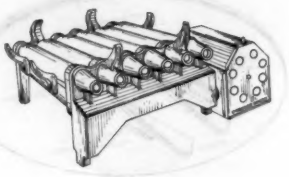
256,610
PORTABLE SHOWER
Marcel Belkir, 1701 York Ave., New York, N.Y. 10028
Filed Oct. 16, 1978, Ser. No. 951,849
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—57



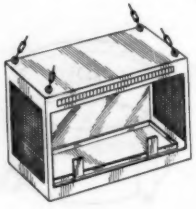
256,611
WATER CLOSET
Andre Primault, Garches, France, assignor to Societe Generale de Fonderie, Paris, France
Filed Oct. 23, 1978, Ser. No. 953,542
Claims priority, application France, Apr. 21, 1978, 78.76506
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—65



256,612
FIREPLACE GRATE
Carl W. Knight, Shaker Heights; Richard G. Hart, North Olmsted, and William H. Greenwald, Strongsville, all of Ohio, assignors to National Utility Products Company
Filed Aug. 28, 1978, Ser. No. 937,185
Term of patent 14 years
Int. Cl. D7—*08;* D23—*08*
U.S. Cl. D23—95



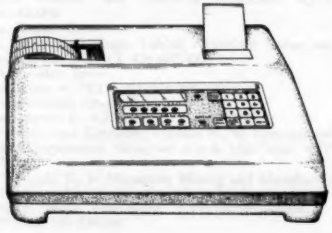
256,613
PORTABLE FIREPLACE
Gloria D. Hilker, 1109 S. Landmark Trail, Hopkins, Minn. 55343
Filed Aug. 28, 1978, Ser. No. 937,442
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



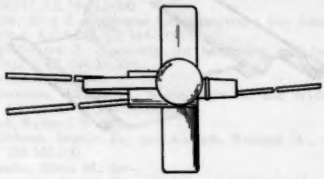
256,614
COMBINED CEILING FAN COVER PLATE AND BLADE CONNECTORS
Joseph N. Hoyt, 2955 Shipping Ave., Miami, Fla. 33133
Filed Apr. 24, 1978, Ser. No. 899,652
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—163

256,615
STERILIZER UNIT
Michael D. Thomas, Arab, Ala., assignor to Ryder International Corporation, Arab, Ala.
Filed Mar. 17, 1978, Ser. No. 887,991
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—9

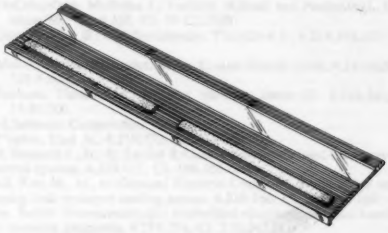
256,616
TERMINAL FOR COMPUTER ASSISTED ECG SERVICE
Robert M. Stuckelman, 2139 S. Pontius Ave., Los Angeles, Calif. 90025
Filed Apr. 5, 1978, Ser. No. 893,714
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—17



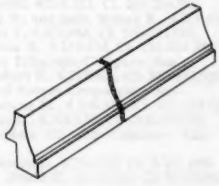
256,617
DOUBLE LUMEN CATHETER INSERT
Anton H. Clemens, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.
Filed Feb. 13, 1978, Ser. No. 877,428
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—54



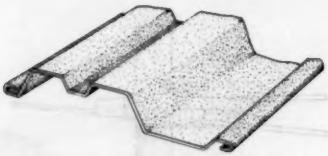
256,618
COVER FOR A STEP
Miles Klein, N. Hollywood, Calif., assignor to Contempo Campers, Inc.
Filed Dec. 4, 1978, Ser. No. 965,681
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—69



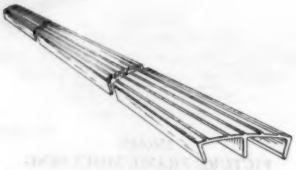
256,619
PICTURE FRAME MOULDING
Johannes Vihma, Toronto, Canada, assignor to Artistic Woodwork Co. Ltd.
Filed Feb. 21, 1978, Ser. No. 879,708
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



256,620
SHEET PILING
Jens H. Madsen, Guelph, Canada, assignor to Armco Inc., Middletown, Ohio
Filed Sep. 27, 1978, Ser. No. 946,162
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



256,621
FLOOR SLAT FOR HOG CONFINEMENT FACILITIES OR SIMILAR ARTICLE
Ronald L. Dillon, P.O. Box 1035, Spencer, Iowa 51301
Filed May 30, 1978, Ser. No. 910,481
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—75



256,622
HAND-HELD LIGHT
Mitsuyoshi Osawa, Gunma, Japan, assignor to Ichikawa Press Industries Co., Ltd., Takasaki, Japan
Filed Oct. 20, 1978, Ser. No. 953,115
Claims priority, application Japan, Aug. 25, 1978, 53-36000
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D26—45

256,623
PIPE
Edward M. Lockwood, 1592 Willowbrook Dr., San Jose, Calif. 95118
Filed Jul. 31, 1978, Ser. No. 929,458
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D27—03

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 26TH DAY OF AUGUST, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A/S Bergens Mekaniske Verksteder: *See—*
Pedersen, Hakon S., 4,218,883, Cl. 60-427.000.

A/S Cheminova: *See—*
Madsen, Hans B.; Klemmensen, Per D.; and Kolind-Andersen, Hans, 4,219,558, Cl. 424-263.000.

Abbott Laboratories: *See—*
Collum, Paulette; and Fager, Earl E. C., 4,219,642, Cl. 536-17.00R.
Genese, Joseph N., 4,219,022, Cl. 128-214.00G.
Goldstein, Alma W.; and Fager, Earl E. C., 4,219,644, Cl. 536-17.00R.
Plattner, Jacob J.; Stroupe, Stephen D.; and Voss, Houston F., 4,219,497, Cl. 260-501.140.
Seely, John H., 4,219,643, Cl. 536-17.00R.

Abe, Masaru: *See—*
Inoue, Osamu; Abe, Masaru; Chiba, Koji; and Miyoshi, Isao, 4,219,601, Cl. 428-222.000.

Abe, Michio: *See—*
Kumagai, Seiichiro; Abe, Michio; and Maeda, Naoyuki, 4,219,001, Cl. 123-169.0EL.

Abel, Heinz; and Soiron, Charles, to Ciba-Geigy Corporation. Process for dyeing wool or wool/synthetic blends. 4,219,332, Cl. 8-532.000.

Abeyama, Shozo: *See—*
Fujiwara, Tatsuo; Abeyama, Shozo; Ishida, Kiyohito; and Nakamura, Sadayuki, 4,219,356, Cl. 75-126.00L.

Abt, Reinhold: *See—*
Katz, Klaus; Abt, Reinhold; Bordovsky, Jaromir; Pfundstein, Wolfgang; and Wingert, Georg, 4,218,958, Cl. 91-434.000.

ACF Industries, Incorporated: *See—*
Polley, Richard B., 4,219,047, Cl. 137-590.000.

Ackermann, Peter: *See—*
Drabek, Jozef; Ackermann, Peter; Farooq, Saleem; Gsell, Laurenz; and Kristiansen, Odd, 4,219,564, Cl. 424-305.000.

ACME Manufacturing Company: *See—*
Przygocki, Witold C., 4,218,800, Cl. 15-88.000.

Acres, Penelope A. Speech therapy. 4,218,836, Cl. 35-35.00R.

Acuff, Daniel S. Word game using cards and a row designator. 4,219,197, Cl. 273-299.000.

Adams, John W.: *See—*
Engelmann, Rudolph H., 4,219,872, Cl. 363-126.000.

Adams Rite Manufacturing Co.: *See—*
Eads, Charles L., 4,218,903, Cl. 70-107.000.

Addison Products Company: *See—*
Bergen, Bernard J., 4,219,012, Cl. 126-449.000.

Aerovironment Inc.: *See—*
MacCready, Paul B., Jr., 4,219,887, Cl. 367-90.000.

AFA Corporation, The: *See—*
Wesner, Walter H., 4,219,159, Cl. 239-343.000.

AGA Aktiebolag: *See—*
Knoos, Stellan, 4,219,011, Cl. 126-444.000.

Air Preheater Company, Inc., The: *See—*
Stockman, Richard F., 4,219,069, Cl. 165-9.000.

Air Products and Chemicals, Inc.: *See—*
Iacoviello, John G.; and Daniels, Wiley E., 4,219,454, Cl. 260-29.60T.
Longsworth, Ralph C., 4,219,588, Cl. 427-160.000.

Airhart, Tom P., to Atlantic Richfield Company. Submergible marine seismic source. 4,219,096, Cl. 181-113.000.

Aisin Seiki Kabushiki Kaisha: *See—*
Inada, Masami; Ito, Shoji; Kitamura, Kazauhiko; and Harada, Toshiro, 4,219,250, Cl. 339-15.000.

Aizawa, Hiroshi: *See—*
Date, Nobuaki; Uchidoi, Masanori; Aizawa, Hiroshi; Shimizu, Masami; and Takishima, Yoshiyuki, 4,219,260, Cl. 354-23.00D.

Ajinomoto Company, Incorporated: *See—*
Inazuka, Shinichi; and Tsuchiya, Shigekatsu, 4,219,570, Cl. 424-343.000.

Akamatsu, Kazuo: *See—*
Mori, Hiroyuki; Iwanaga, Yukiya; Akamatsu, Kazuo; and Kubota, Hayato, 4,219,584, Cl. 426-607.000.

Alamar Associates: *See—*
Weiss, Allen, 4,219,176, Cl. 248-188.100.

Albany International Corp.: *See—*
Quinan, James R., 4,219,139, Cl. 222-590.000.

Albert, Paul A.; and Kennedy, Thomas N., to International Business Machines Corporation. Read/write thin film head. 4,219,853, Cl. 360-103.000.

Albrecht, Donald E., to Minnesota Mining and Manufacturing Company. Photocurable epoxy composition having improved flexibility comprising vinyl terminated acrylonitrile-butadiene polymer. 4,219,377, Cl. 156-330.000.

Albrecht, Wilhelm; Riemer, Bernd; and Allert, Anton, to Daimler-Benz Aktiengesellschaft. Multipartite pedal of plastic material for vehicles. 4,218,937, Cl. 74-513.000.

Albright, Alva Z. Apparatus for converting a tree feller into a feller buncher. 4,219,058, Cl. 144-3.00D.

Albright, Alva Z. Apparatus for harvesting and bunching trees. 4,219,059, Cl. 144-34.00R.

Alden, John R.: *See—*
Goodson, William D.; Alden, John R.; and Hyder, David L., 4,219,878, Cl. 364-565.000.

Aldrich, Richard W.: *See—*
Gibbons, Martin D.; and Aldrich, Richard W., 4,219,845, Cl. 358-105.000.

Alexander, Mesta M.: *See—*
Esposito, Joseph P.; and Alexander, Mesta M., 4,218,979, Cl. 108-106.000.

Alexander, William K.: *See—*
Frantz, Charles E.; Alexander, William K.; and Lander, Walter E. B., 4,218,908, Cl. 72-302.000.

Allemeersch, Jozef R. G.; and Devriese, Thierry E. G., to Sperry Corporation. Drive reversing mechanism. 4,218,864, Cl. 56-11.200.

Allen, David H.; Rogers, Peter R.; and Whitney, John, to Cam Gears Limited. Rack and pinion gear assembly. 4,218,933, Cl. 74-422.000.

Allen, Joseph C.; and Tate, Jack F., to Texaco Inc. Composition and process for stimulating well production. 4,219,429, Cl. 252-8.55C.

Allen, Robert L.: *See—*
Evans, James T.; and Allen, Robert L., 4,218,845, Cl. 46-180.000.

Allert, Anton: *See—*
Albrecht, Wilhelm; Riemer, Bernd; and Allert, Anton, 4,218,937, Cl. 74-513.000.

Allibert Exploitation: *See—*
Deconinck, Didier, 4,219,035, Cl. 132-84.00D.

Allied Chemical Corporation: *See—*
Cooke, Robert S.; Baker, Josefina T.; and Sifniades, Stylianos, 4,219,635, Cl. 528-182.000.
DeCristofaro, Nicholas J.; Freilich, Alfred; and Nathasingh, Davidson M., 4,219,355, Cl. 75-123.00B.
Gancy, Alan B.; and Jenczewski, Theodore J., 4,219,396, Cl. 204-180.00P.
Mares, Frank; Oxenrider, Bryce C.; and Woolf, Cyril, 4,219,625, Cl. 525-5.000.
Parham, Thomas M., Jr.; and Sansing, James E., 4,219,348, Cl. 71-30.000.

Allis-Chalmers Corporation: *See—*
Naylor, Carl A., 4,219,772, Cl. 324-216.000.

Allor, Bernard J., Jr., to Taylor & Gaskin Inc. Power and free conveyor control system. 4,219,111, Cl. 198-355.000.

Allred, Roy H., Jr., to General Electric Company. Fluid spray nozzle having leak resistant sealing means. 4,219,160, Cl. 239-447.000.

Allvin, Bertil. Thermostatically controlled electrically heated hand tool for pressing garments. 4,219,724, Cl. 219-243.000.

Alpha Associates, Inc.: *See—*
Bouffard, Alphee J.; and Bouffard, Alphee T. J., 4,218,973, Cl. 101-181.000.

Altiery, Anthony S.: *See—*
van Loon, Paul G. G.; Altiery, Anthony S.; and Kay, Steeve T. S., 4,219,835, Cl. 357-55.000.

Aluminum Company of America: *See—*
Foster, Perry A., Jr., 4,219,391, Cl. 204-67.000.

Amberg, Stephen W., to Owens-Illinois, Inc. Plastic package. 4,219,124, Cl. 215-12.00R.

American Can Company: *See—*
Detroit, William J., 4,219,471, Cl. 260-124.00R.
Howard, Thomas B.; and Stary, Christof, 4,218,863, Cl. 53-547.000.

American Cyanamid Company: *See—*
Chiccarelli, Fortunato S., 4,219,668, Cl. 562-469.000.
Grudzinskas, Charles V.; and Weiss, Martin J., 4,219,496, Cl. 260-464.000.
Leffler, Carl T., 4,219,382, Cl. 162-180.000.
Porosoff, Harold, 4,219,523, Cl. 264-206.000.
Press, Jeffery B.; and Safir, Sidney R., 4,219,656, Cl. 549-64.000.
Weiss, Martin J., 4,219,664, Cl. 560-121.000.
Weston, Norma A., 4,219,438, Cl. 252-301.350.

American District Telegraph Company: *See—*
Enemark, Robert B., 4,219,806, Cl. 340-632.000.

American Hospital Supply Corporation: *See—*
Jaremus, Boubene M., 4,219,330, Cl. 433-126.000.
O'Day, David L., 4,219,177, Cl. 248-215.000.
Slappey, Thomas E.; and Capehart, Dan B., 4,219,257, Cl. 351-1.000.
Stansbury, Benjamin, 4,218,778, Cl. 2-163.000.
Steckmesser, Bradd E., 4,218,788, Cl. 5-74.00R.

Amfac Foods, Inc.: *See*—
Saunders, Francis R.; and McLaughlin, Richard L., 4,219,575, Cl. 426-242.000.

AMSTED Industries Incorporated: *See*—
Littlefield, John B., 4,219,452, Cl. 260-3.000.

Anand, Joginder N.; Revak, Timothy T.; and Tsang, Floris Y., to Dow Chemical Company, The. Helium-tight tubesheet for hollow fiber type battery cells and method of fabricating the same. 4,219,613, Cl. 429-104.000.

Andersen, Glen L.: *See*—
Zimmerer, Arthur L., deceased; First National Bank and Trust Co., joint executor; Siekmeier, David A.; Andersen, Glen L.; and Meis, Charles H., 4,219,043, Cl. 137-312.000.

Anderson, David W.; King, William H.; and Malley, David R., to United Technologies Corporation. Two-way surfacing process by fusion welding. 4,219,592, Cl. 427-405.000.

Anderson, Ray A. Insect trap assemblage. 4,218,842, Cl. 43-122.000.

Anderson, Rohn J.: *See*—
Hargrave, Harold M.; and Anderson, Rohn J., 4,219,050, Cl. 138-97.000.

Anderson, William B., to United States of America, Navy. Multi-point reflective target system. 4,219,886, Cl. 367-87.000.

Ando, Yujiro: *See*—
Ohkubo, Masharu; Ando, Yujiro; Honma, Toshio; Murakawa, Shuji; Murakami, Katsumi; and Furuichi, Katsushi, 4,219,271, Cl. 355-14.00R.

Anglo-American Clays Corporation: *See*—
Price, William M.; and Nott, Alan J., 4,219,408, Cl. 209-5.000.

Anic S.p.A.: *See*—
Cucinella, Salvatore, 4,219,491, Cl. 260-448.0AD.

Antesberger, Edward A., to United States of America, Army. Ballistic drive synchronizer. 4,218,912, Cl. 73-1.00E.

Anthony, Theodore W., to Schuylkill Metals Corporation. Method of operating a lead blast furnace. 4,219,353, Cl. 75-77.000.

Aoki, Eiichiro: *See*—
Nakada, Akira; Aoki, Eiichiro; Oya, Akiyoshi; Okumura, Takatoshi; Uchiyama, Yasuji; and Yamaga, Eiichi, 4,218,948, Cl. 84-1.010.

Aoyagi, Shoji: *See*—
Oda, Shinichi; Aoyagi, Shoji; Kuroda, Takio; and Tozaki, Eishun, 4,219,220, Cl. 282-27.500.

Aoyama, Syunichi, to Nissan Motor Company, Limited. Hydraulic valve lifter mechanism for internal combustion engine. 4,218,995, Cl. 123-90.550.

Araki, Naomiki; and Inoue, Yasuo, to Olympus Optical Co., Ltd. Illuminating device for use in a funduscopic apparatus. 4,219,258, Cl. 351-16.000.

Arbiter, Ivor D., to CBS/Arbiter Limited. Drum tensioning. 4,218,952, Cl. 84-411.00A.

Archer, Catherine: *See*—
Ducresot, Pierre; and Archer, Catherine, 4,219,102, Cl. 182-220.000.

ARCHIFAR Laboratori Chimico Farmacologici S.p.A.: *See*—
Marsili, Leonardo; Rossetti, Vittorio; and Pasqualucci, Carmine, 4,219,478, Cl. 260-239.30P.

Argus Chemical Corporation: *See*—
Minagawa, Motonobu; Kubota, Naohiro; Haruna, Tohru; and Shibata, Toshihiro, 4,219,463, Cl. 260-45.80N.

Arikawa, Hiroo; Maruo, Masaya; and Yuza, Yasutada, to San-O Industrial Corporation. Fusible element for fuses. 4,219,794, Cl. 337-292.000.

Arinci, Giovanni; and Buscioni, Mauro. Cleaning broom of improved structure. 4,218,804, Cl. 15-174.000.

Armistead, William H.; and Lachman, Irwin M., to Corning Glass Works. Method of producing manganese cordiertie glass-ceramics. 4,219,344, Cl. 65-18.000.

Armstrong, Douglas: *See*—
Runck, Alan H.; Armstrong, Douglas; and Hutchisson, James T., 4,219,440, Cl. 252-408.000.

Aronhalt, Herman L., to Cavert Wire Company, Inc. Bale tie straightener. 4,219,052, Cl. 140-140.000.

Arrow Paper Products Company: *See*—
Stark, Martin H., 4,219,149, Cl. 229-37.00R.

Arulanandan, Kandiah, to University of California, The Regents of the. Method and apparatus for measuring in situ density and fabric of soils. 4,219,776, Cl. 324-323.000.

Arvin Industries, Inc.: *See*—
Dalke, James, 4,219,763, Cl. 315-378.000.

Asahi-Dow Limited: *See*—
Yoshida, Kazuo; and Fukuda, Kunio, 4,219,466, Cl. 260-45.75B.

Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Sakurai, Hisaya; Moriguchi, Kisoo; and Katayama, Yoshihiko, 4,219,453, Cl. 260-23.00H.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Takaoka, Yukio; and Kawasaki, Masahiro, 4,219,262, Cl. 354-38.000.

Asai, Nobuteru, to Hitachi, Ltd. Thermal recording apparatus. 4,219,824, Cl. 346-76.0PH.

Asakawa, Kobun: *See*—
Sato, Kunihiko; Urata, Tetsuro; Asamoto, Tetsuhiro; Asakawa, Kobun; Uebayashi, Takeo; and Taguchi, Haruo, 4,219,718, Cl. 219-69.00M.

Asakura, Kouichi; and Sagara, Makoto, to Toshiba Kikai Kabushiki Kaisha. Method and apparatus for determining axes of cylindrical blanks. 4,218,825, Cl. 33-174.00Q.

Asamoto, Tetsuhiro: *See*—
Sato, Kunihiko; Urata, Tetsuro; Asamoto, Tetsuhiro; Asakawa, Kobun; Uebayashi, Takeo; and Taguchi, Haruo, 4,219,718, Cl. 219-69.00M.

ASEA Aktiebolag: *See*—
Danfors, Per; Fahlen, Nils; and Nerf, Owe, 4,219,856, Cl. 361-15.000.
Eriksson, Kent; and Zetterlund, Uno, 4,219,792, Cl. 336-60.000.

Ashland Oil, Inc.: *See*—
Kovach, Stephen M., 4,219,690, Cl. 585-467.000.

Assion, Norbert. Storage or holder device for electrical appliance. 4,219,178, Cl. 248-314.000.

Associated Engineering Limited: *See*—
Hunt, Norman, 4,218,997, Cl. 123-352.000.

Athanas, Terry G., to Mostek Corporation. Method for making a semiconductor device. 4,219,379, Cl. 156-653.000.

Atlantic Richfield Company: *See*—
Airhart, Tom P., 4,219,096, Cl. 181-113.000.

Auer, John H., Jr.: *See*—
Sluis, Mark H.; and Auer, John H., Jr., 4,219,837, Cl. 367-128.000.

Auphan, Michel J., to U.S. Philips Corporation. Device for scanning and display by means of ultrasonic waves. 4,219,846, Cl. 358-112.000.

"Autostrade"-Concessioni e Costruzioni Autostrade S.p.A.: *See*—
Ceseri, Pierluigi, 4,219,802, Cl. 340-552.000.

Av-Zuk, Moshe. Profile for holding panels. 4,218,860, Cl. 52-484.000.

Avery International Corporation: *See*—
Takemoto, Shiro G.; and Sasaki, Yukihiko, 4,219,596, Cl. 428-41.000.

Babb, Larry F.; and Noveske, Walter J., to Emerson Electric Co. Drain cleaning apparatus. 4,218,802, Cl. 15-104.3SN.

Babinsky, Andrew D.; Hora, Charles J.; Peters, Edward J.; and Zeman, Wayne P., to Diamond Shamrock Corporation. Membrane assembly for electrolytic cells. 4,219,394, Cl. 204-98.000.

Baker, Josefina T.: *See*—
Cooke, Robert S.; Baker, Josefina T.; and Sifniades, Stylianos, 4,219,635, Cl. 528-182.000.

Baklanov, Grigory M.: *See*—
Tokar, Vladimir A.; Zubik, Maria I.; Baklanov, Grigory M.; Matygin, Nikolai F.; Ustinov, Valentin S.; Kolesnikov, Anatoly V.; Gashenko, Stanislav I.; Rogatkin, Alexandr A.; Khlopkov, Leonid P.; Mikheeva, Vera I.; Lekalova, Lidia I.; Drepin, Nikolai F.; Feofanov, Lev P.; Khodotova, Nina E.; Shevchenko, Ivan I.; Telina, Larisa A.; Garmash, Vladimir I.; and Frantsevich, Andrei M., 4,219,363, Cl. 106-100.000.

Balco Filtertechnik GmbH: *See*—
Heidborn, Ernst, 4,219,427, Cl. 210-497.00R.

Baldwin Piano & Organ Company: *See*—
Uetrecht, Dale M., 4,218,950, Cl. 84-1.190.

Ban, Itsuki; Shiraki, Manabu; and Egami, Kazuhito. Direct current motor with non-superposed armature windings. 4,219,750, Cl. 310-154.000.

Ban, Itsuki; Shiraki, Manabu; and Egami, Kazuhito. Direct current motor with non-superposed armature windings. 4,219,751, Cl. 310-154.000.

Bardsley, Charles E., to Mallinckrodt, Inc. Nutrient compositions, methods and processes. 4,219,349, Cl. 71-62.000.

Barer, Sol J., to Celanese Corporation. 2-Ethyl-1,3-hexanediol as a chemical pinching agent. 4,219,350, Cl. 71-78.000.

Barker, Julius A.: *See*—
Stragier, Marcel G.; Peterson, Theodore J.; Bingman, John W.; and Barker, Julius A., 4,219,298, Cl. 414-409.000.

Barlow, Donald W., Sr. Phase change material heat exchanger. 4,219,072, Cl. 165-32.000.

Barnish, Ian T.; Cross, Peter E.; Danilewicz, John C.; Morville, Malcolm; and Page, Michael G., to Pfizer Inc. Phenylglyoxylic acids and derivatives thereof. 4,219,566, Cl. 424-317.000.

Baron, Sidney: *See*—
Parssinen, Edwin J.; White, John F.; and Baron, Sidney, 4,219,889, Cl. 367-158.000.

BASF Aktiengesellschaft: *See*—
Fischer, Adolf, deceased; Rohr, Wolfgang; and Paul, Gerhard, 4,219,493, Cl. 260-456.00A.
Fischer, Adolf, deceased; Hansen, Hanspeter; Rohr, Wolfgang; and Hamprecht, Gerhard, 4,219,494, Cl. 260-456.00A.
Hamprecht, Gerhard, 4,219,499, Cl. 260-543.00R.
Platz, Rolf; Weitz, Hans-Martin; and Hartig, Juergen, 4,219,666, Cl. 560-246.000.
Sinn, Richard; Nagel, Otto; Sander, Bruno; Bonitz, Eckhard; Scherling, Kurt; Zettler, Hans D.; Stoehr, Dieter; and Berbner, Heinz, 4,219,512, Cl. 264-11.000.
Treptow, Wolfram; Wunsch, Gerd; Kiener, Volker; Meyer, Hermann; and Csizi, Gotthard, 4,219,400, Cl. 204-266.000.

Bata Shoe Company, Inc.: *See*—
Hurst, Eric J.; and MacAulay, Hugh G., 4,219,514, Cl. 264-37.000.

Batchelor, John H. Vacuum pump closure for canisters and vacuum pack containers. 4,218,967, Cl. 99-472.000.

Battelle Development Corporation: *See*—
Ensminger, Dale, 4,218,922, Cl. 73-588.000.

Battelle-Institut e. V.: *See*—
Schluter, Gert; and Schuster, Wilhelm, 4,219,334, Cl. 23-230.00B.

Batteux, Pierre; and Morel, Robert, to Merlin Gerin. Current limiting circuit breaker. 4,219,790, Cl. 335-16.000.

Baumann, William M., to UOP Inc. Method of extruded catalyst manufacture. 4,219,521, Cl. 264-141.000.

Bayer Aktiengesellschaft: *See*—
Becker, Robert; Grolig, Johann; Rasp, Christian; and Scharfe, Gerhard, 4,219,661, Cl. 560-24.000.
Fritze, Ulrich; and Herschinger, Heinz, 4,219,398, Cl. 204-195.00M.
Haberkorn, Axel; Scheer, Martin; and Stoltefuss, Jurgen, 4,219,552, Cl. 424-249.000.
Heller, Karl-Heinz; and Lenz, Gunther, 4,219,388, Cl. 203-61.000.
Maurer, Fritz; and Hammann, Ingeborg, 4,219,546, Cl. 424-200.000.
Muschelknautz, Edgar; and Juse, Rudolf, 4,219,380, Cl. 159-47.00R.
Nielinger, Werner; Neuray, Dieter; and Brassat, Bert, 4,219,636, Cl. 528-318.000.
Riebel, Hans-Jochem; and Stolzer, Claus, 4,219,511, Cl. 260-973.000.
Wagner, Kuno, 4,219,508, Cl. 568-387.000.
Wolfers, Heinrich; and Rosenkranz, Hans J., 4,219,626, Cl. 525-23.000.
Wolfers, Heinrich; Walter, Oskar; Rudolph, Hans; and Rosenkranz, Hans J., 4,219,674, Cl. 568-559.000.

Bayer, Horst O.; Swithenbank, Colin; and Yih, Roy Y., to Rohm and Haas Company. Herbicidal 4-trifluoromethyl-4-nitrodiphenyl ethers. 4,219,352, Cl. 71-105.000.

Baylis, Anthony B.: *See*—
Slinkard, William E.; and Baylis, Anthony B., 4,219,671, Cl. 562-548.000.

Bazile, Yves; de Cointet de Fillain, Paul; and Pigerol, Charles, to Labaz. Process for preparing thiophene and furan derivatives. 4,219,482, Cl. 549-68.00A.

BBC Brown, Boveri & Company Limited: *See*—
Kuhnen, Gottfried, 4,219,717, Cl. 219-61.000.

Beadle, Leigh P., to Specialty Products International, Ltd. Lid construction for fermentation container. 4,218,964, Cl. 99-275.000.

Becker, Robert; Grolig, Johann; Rasp, Christian; and Scharfe, Gerhard, to Bayer Aktiengesellschaft. Process for the production of urethanes. 4,219,661, Cl. 560-24.000.

Beckman Instruments, Inc.: *See*—
Lencioni, Cecil C., Jr., 4,219,028, Cl. 128-731.000.

Beffa, Fabio; and Steiner, Eginhard, to Ciba-Geigy Corporation. Substituted unsymmetrical azo, azomethine 1:2 chromium complexes. 4,219,473, Cl. 260-151.000.

Behringwerke Aktiengesellschaft: *See*—
Stark, Joseph; and Muller-Matthesius, Reinhard, 4,219,645, Cl. 536-27.000.

Beil, Lawrence E.: *See*—
Speck, Robert M.; and Beil, Lawrence E., 4,219,807, Cl. 340-664.000.

Bell, Robert L., to Fisher Corporation. Reclining and emergency latch mechanism for vehicle seats. 4,219,234, Cl. 297-374.000.

Bell Telephone Laboratories, Incorporated: *See*—
Cordell, Robert R., 4,219,788, Cl. 333-28.00R.
Feiner, Alexander, 4,219,701, Cl. 179-99.00H.

Bellavia, John, Jr.: *See*—
United States of America, National Aeronautics and Space Administration; Bellavia, John, Jr.; and Kane, John O., 4,219,203, Cl. 277-181.000.

Bellofram Corporation: *See*—
St. Laurent, Wilfred H., Jr., 4,219,042, Cl. 137-85.000.

Bendix Corporation, The: *See*—
Luscomb, Douglas A., 4,219,154, Cl. 239-91.000.

Bengt Petersson New Products Investment AB: *See*—
Hagelberg, Gabriella, 4,219,144, Cl. 229-2.50R.

Berardinelli, Frank M.: *See*—
Edelman, Robert; Berardinelli, Frank M.; and Wissbrun, Kurt F., 4,219,527, Cl. 264-540.000.

Berbner, Heinz: *See*—
Sinn, Richard; Nagel, Otto; Sander, Bruno; Bonitz, Eckhard; Scherling, Kurt; Zettler, Hans D.; Stoehr, Dieter; and Berbner, Heinz, 4,219,512, Cl. 264-11.000.

Berchem, Antoine: *See*—
Sudan, Krishan K.; and Berchem, Antoine, 4,219,623, Cl. 521-85.000.

Bergan, Norman A.; Walker, Robert G.; and Van Weelden, Marvin, to Saladmaster, Inc. Attachment for food cutters. 4,219,165, Cl. 241-93.000.

Bergdahl, Knut. Arrangement in axial fans, compressors, turbines, pumps or the like. 4,219,307, Cl. 415-182.000.

Berge, LeRoy H.: *See*—
Oran, William A.; Berge, LeRoy H.; Reiss, Donald A.; and Johnson, Jerry L., 4,218,921, Cl. 73-505.000.

Bergen, Bernard J., to Addison Products Company. Solar heating with air transfer. 4,219,012, Cl. 126-449.000.

Berger, Leo; Plati, John T.; and Ziering, Albert, to Hoffmann-La Roche Inc. Dibenzothiophenes. 4,219,657, Cl. 549-43.000.

Bergwerksverband GmbH: *See*—
Pietzka, Gerhard; Tillmanns, Harald; and Romey, Ingo, 4,219,405, Cl. 208-50.000.

Berkman, Samuel, to BST & Associates, Inc. Magnetic fastener-holding tool attachment. 4,219,062, Cl. 145-52.000.

Berkman, Samuel, to BST & Associates, Inc. Tool for holding a fastener to a driver therefor. 4,219,063, Cl. 145-52.000.

Berkshire, David C.: *See*—
Richardson, Edwin A.; Scheuerman, Ronald F.; and Berkshire, David C., 4,219,083, Cl. 166-300.000.

Bernath, Gabor: *See*—
Knoll, Josef; Meszaros, Zoltan; Hermecz, Istvan; Fulop, Ferenc; Bernath, Gabor; Virag, Sandor; Nagy, Gabor; and Szentmiklosi, Peter, 4,219,649, Cl. 544-282.000.

Bernfeld, Morris: *See*—
Kamen, Melvin E.; Bernfeld, Morris; and Pelc, John C., 4,219,721, Cl. 219-121.0LM.

Bernhard, John S.: *See*—
Weikel, Donald J., Jr.; and Bernhard, John S., 4,219,270, Cl. 355-3.00R.

Bernhardt, Reiner, to Bockemuehl, Johannes. Developing drum for photographic material. 4,219,269, Cl. 354-329.000.

Biard, Daniel; Lichtfus, Gerard J.; Pracht, Hans J.; and Kleeman, Wolfgang, to Procter & Gamble Company, The. Detergent tablet coating. 4,219,435, Cl. 252-90.000.

Bielicki, Lucian C., to Muni Recovery Systems, Inc. Magnetically responsive tab for aluminum containers. 4,219,127, Cl. 220-269.000.

Bier, Gerhard: *See*—
Buning, Robert; and Bier, Gerhard, 4,219,591, Cl. 427-387.000.

Bierl-Leonhardt, Barbara A.: *See*—
Klun, Jerome A.; Plimmer, Jack R.; Bierl-Leonhardt, Barbara A.; and Sparks, Alton N., 4,219,542, Cl. 424-84.000.

Biermann, Peter; Ewald, Otto; Feucht, Rudi; and Schmidt, Manfred, to Vereinigte Baubeschlagfabriken Gretsch & Co. GmbH. Cross-country ski bindng with retaining means for a forwardly extended boot sole. 4,219,215, Cl. 280-615.000.

Biggs, Joel T. Portable shelter. 4,219,036, Cl. 135-1.00R.

Bingman, John W.: *See*—
Stragier, Marcel G.; Peterson, Theodore J.; Bingman, John W.; and Barker, Julius A., 4,219,298, Cl. 414-409.000.

Binoche, Michel, to S.K.M. Hydrostatic paint atomization spray-gun. 4,219,157, Cl. 239-296.000.

Biocoating Anpartsselskab: *See*—
Rygg, Inge H., 4,218,782, Cl. 3-1.500.

Biola, Georges; Komorn, Yves; and Schneider, Gerard, to Rhone-Poulenc Industries. Separation of acrylic acid from solutions thereof in tri-n-butyl phosphate. 4,219,389, Cl. 203-72.000.

Birilli, Joseph A.; DeBacker, Dennis; and DiStefano, Carl, to Boreas Electronics, Inc. Remotely actuated telephone alarm system. 4,219,698, Cl. 179-5.00P.

Blackburn, Donald E. Method and apparatus for accomplishing flame ignition for an internal combustion engine. 4,218,993, Cl. 123-256.000.

Bland, Gerald F., to Outboard Marine Corporation. Pressure actuated shifting mechanism. 4,218,955, Cl. 91-47.000.

Blatchfond, Michael I. Vehicle-mounted crane assembly. 4,219,122, Cl. 212-73.000.

Blight, Alison M.: *See*—
Blight, Langdon R., 4,218,799, Cl. 15-77.000.

Blight, Langdon R., to Blight, Alison M. Wash-out apparatus for printing machines. 4,218,799, Cl. 15-77.000.

Bliley, Ward L.: *See*—
Wiltshire, Arthur J.; Nara, Harry R.; LeBreton, Edward T.; and Bliley, Ward L., 4,219,125, Cl. 220-5.00A.

Block, Thomas S., to Clarke-Gravely Corporation. Floor treating machine. 4,218,798, Cl. 15-49.00R.

Bloom, Allen; Burke, William J.; and Ross, Daniel L., to RCA Corporation. Optical recording medium. 4,219,826, Cl. 346-135.100.

Blum, Paul, to Transnucleaire, Societe pour les Transports de l'Industrie Nucleaire. Container for the transportation of irradiated fuel elements and handling device adapted therefor. 4,219,735, Cl. 250-507.000.

Boahn, Alfred. Fireplace heating unit. 4,219,005, Cl. 126-121.000.

Bockemuehl, Johannes: *See*—
Bernhardt, Reiner, 4,219,269, Cl. 354-329.000.

Bodine, Albert G. Sonic method and apparatus for activating a fluid in treating material or polishing parts employing coupling resonator member. 4,218,849, Cl. 51-7.000.

Boehringer Mannheim GmbH: *See*—
Guthlein, Werner; Wielinger, Hans; Rittersdorf, Walter; and Werner, Wolfgang, 4,219,336, Cl. 23-230.00B.

Bofors America, Inc.: *See*—
Kleinhans, Robert J., 4,219,091, Cl. 177-211.000.

Boirin, Jean-Claude A.: *See*—
Chaumont, Gerard P. L.; Boirin, Jean-Claude A.; and Jouffroy, Jacques J. M. G., 4,218,865, Cl. 56-13.600.

Bolt, Reginald C., to Molins Limited. Apparatus for perforating a moving web. 4,219,727, Cl. 219-384.000.

Bolton, Philip N.: *See*—
United States of America, National Aeronautics and Space Administration; Gray, Norris C.; Senseny, Robert M.; and Bolton, Philip N., 4,219,084, Cl. 169-70.000.

Bonfatti, Lorenzo: *See*—
Bonfatti, Remo; and Bonfatti, Lorenzo, 4,219,085, Cl. 171-101.000.

Bonfatti, Remo; and Bonfatti, Lorenzo. Multirow sugar-beet harvester. 4,219,085, Cl. 171-101.000.

Bonitz, Eckhard: *See*—
Sinn, Richard; Nagel, Otto; Sander, Bruno; Bonitz, Eckhard; Scherling, Kurt; Zettler, Hans D.; Stoehr, Dieter; and Berbner, Heinz, 4,219,512, Cl. 264-11.000.

Booth, Robert G., to Stop Alert Corporation. Pressure change responsive sensor and related vacuum operable switch assembly. 4,219,710, Cl. 200-81.00R.

Borden, Inc.: *See*—
Messervey, Clifford H.; and Martin, Peter R., 4,219,532, Cl. 422-133.000.

Bordovsky, Jaromir: *See*—
Katz, Klaus; Abt, Reinhold; Bordovsky, Jaromir; Pfundstein, Wolfgang; and Wingert, Georg, 4,218,958, Cl. 91-434.000.

Boreas Electronics, Inc.: *See*—
Birilli, Joseph A.; DeBacker, Dennis; and DiStefano, Carl, 4,219,698, Cl. 179-5.00P.
Borek, James R., to Pillsbury Company, The. Microwave popcorn package. 4,219,573, Cl. 426-107.000.
Borg-Warner Corporation: *See*—
Underwood, Herbert N., 4,218,957, Cl. 91-421.000.
Borggrefe, Gerhard, to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA). Ether carboxylic acids. 4,219,672, Cl. 562-583.000.
Borkan, Florence, to Pharmacaps, Inc. Child-resistant container and safety closure therefor. 4,219,116, Cl. 206-1.500.
Borom, Marcus P.: *See*—
Pasco, Wayne D.; Klug, Frederic J.; and Borom, Marcus P., 4,219,328, Cl. 432-253.000.
Bottrell, Gerald W., to Ventus Energy Corp. Torque control system for wind energy conversion devices. 4,219,308, Cl. 416-43.000.
Bouffard, Alphee J.; and Bouffard, Alphee T. J., to Alpha Associates, Inc. Material handling apparatus for printing plastic film. 4,218,973, Cl. 101-181.000.
Bouffard, Alphee T. J.: *See*—
Bouffard, Alphee J.; and Bouffard, Alphee T. J., 4,218,973, Cl. 101-181.000.
Bourges, Bernard M., to Societe Anonyme: Poclain. Ram with two-part piston rod. 4,218,960, Cl. 92-111.000.
Bowman, Robert W.; and Brown, Raymond A., to National Service Industries, Inc. Plug-in lighting system. 4,219,868, Cl. 362-147.000.
Bowman, Robert W.; and Brown, Raymond A., to National Service Industries, Inc. Apparatus for mounting and supplying power to a luminaire. 4,219,869, Cl. 362-147.000.
Boyen, Lodewijk J. T.; and D'Huys, Rene N. J., to ITT Industries, Inc. Timer, stepping device, hinge and laundry handling machine. 4,218,898, Cl. 68-12.00R.
Bozanic, Donald A.; Mergerian, Dickron; and Minarik, Ronald W., to Westinghouse Electric Corp. Electron spin echo system having magnetic field shift during generation of the echo signal. 4,219,775, Cl. 324-313.000.
Brandenstein, Manfred; Olschewski, Armin; Finzel, Sigismund; Gossmann, Willi; and Stark, Josef, to SKF Kugellagerfabriken GmbH. Wheel for roller skates or the like. 4,219,240, Cl. 301-5.700.
Brandt, Manuel: *See*—
Ihrman, Kryn G.; and Brandt, Manuel, 4,219,502, Cl. 260-578.000.
Brants, Johannes P.: *See*—
Spekle, Hendrikus J.; and Brants, Johannes P., 4,219,426, Cl. 210-232.000.
Brassat, Bert: *See*—
Nielinger, Werner; Neuray, Dieter; and Brassat, Bert, 4,219,636, Cl. 528-318.000.
Brauer, Walter H.: *See*—
Triplett, William C.; Brauer, Walter H.; Burke, Robert; and Morrow, Richard, 4,218,923, Cl. 73-623.000.
Brazier, Alan J., to Vax Appliances Limited. Apparatus for cleaning floors, carpets and the like. 4,218,805, Cl. 15-321.000.
Breault, Richard D., to United Technologies Corporation. Fuel cell electrolyte reservoir layer and method for making. 4,219,611, Cl. 429-13.000.
Bredon Hydraulics Limited: *See*—
White, Gordon D., 4,218,885, Cl. 60-456.000.
White, Gordon D., 4,218,886, Cl. 60-486.000.
Breiter, Manfred W.; Chatterji, Debajyoti; King, Randall N.; and Park, Dong-Sil, to Electric Power Research Institute, Inc. Sulfur electrode container construction and method of manufacture. 4,219,128, Cl. 220-453.000.
Bremer, Noel J.: *See*—
Milberger, Ernest C.; Dolhyj, Serge R.; and Bremer, Noel J., 4,219,484, Cl. 260-346.750.
Breslow, Jeffery D.; and Jaworski, Eugene, to Marvin Glass & Associates. Manual manipulation game. 4,219,195, Cl. 273-110.000.
Brewer, John, to Southworth, Inc. Lift table and cooperating wheel truck assembly. 4,219,186, Cl. 254-9.00C.
Bridgestone Tire Company Limited: *See*—
Inoue, Osamu; Abe, Masaru; Chiba, Koji; and Miyoshi, Isao, 4,219,601, Cl. 428-222.000.
Oyama, Hiroichi, 4,219,522, Cl. 264-173.000.
Tamura, Akira; Suzuki, Yasuo; and Oikawa, Akira, 4,219,066, Cl. 152-353.00G.
Bright, Stephen A.; Gaiser, William R.; and Gaiser, John W., to Broadway Companies, Inc., The. Self-compensating hot manifold link. 4,219,323, Cl. 425-572.000.
Brinkmann Instruments, Inc.: *See*—
Kopp, Reiner H.; and Schmermund, John, 4,219,530, Cl. 422-69.000.
Bristol-Myers Company: *See*—
Lin, Jeng S.; and Sleezer, Paul D., 4,219,495, Cl. 260-456.00P.
Bristol Products, Inc.: *See*—
Crawford, Dennis W.; and Turner, Larry G., 4,218,785, Cl. 4-203.000.
Crawford, Dennis W.; and Turner, Larry G., 4,219,184, Cl. 251-297.000.
British-American Tobacco Company Limited: *See*—
Horsewell, Henry G.; Green, John D.; Luke, John A.; and Candlish, Stanley M., 4,219,033, Cl. 131-261.00B.
British Communications Corporation, Ltd.: *See*—
Carter, Margaret P.; and Hodgson, David, 4,219,783, Cl. 331-1.00A.
Broadway Companies, Inc., The: *See*—
Bright, Stephen A.; Gaiser, William R.; and Gaiser, John W., 4,219,323, Cl. 425-572.000.
Brouthers, Paul E., to DWA Associates Inc. Firearm. 4,218,839, Cl. 42-65.000.
Brown, Raymond A.: *See*—
Bowman, Robert W.; and Brown, Raymond A., 4,219,868, Cl. 362-147.000.
Bowman, Robert W.; and Brown, Raymond A., 4,219,869, Cl. 362-147.000.
Bruckel, Dieter; and Jahn, Gunther, to Olympia Werke AG. Electrophotographic copier with replaceable photoconductive sheet. 4,219,272, Cl. 355-16.000.
Brumfield, Stanford O. Staple remover. 4,219,187, Cl. 254-28.000.
Brusadin, Giacomo, to Uniflex S.p.A. Rapid coupling and uncoupling joint for flexible pipes. 4,219,222, Cl. 285-8.000.
Bryan, James S.: *See*—
Gard, Eric A.; and Bryan, James S., 4,219,089, Cl. 177-165.000.
BST & Associates, Inc.: *See*—
Berkman, Samuel, 4,219,062, Cl. 145-52.000.
Berkman, Samuel, 4,219,063, Cl. 145-52.000.
Buccicone, Dana F., to South Bend Lathe. Inch/metric thread dial. 4,218,942, Cl. 82-22.000.
Buckley, Michael A.; and Friedman, David F. Container having an interiorly telescoping dispensing member. 4,219,283, Cl. 401-129.000.
Budziak, Renno W.: *See*—
Willoughby, Robert A.; Law, John P.; and Budziak, Renno W., 4,218,853, Cl. 51-269.000.
Buell, Erik F. Mass transit systems. 4,218,889, Cl. 60-676.000.
Bundy, Gordon L.; and Nelson, Norman A., to Upjohn Company, The. 11-Deoxy-17-phenyl-PGE$_1$ analogs. 4,219,662, Cl. 560-53.000.
Bunes, Leonard A.: *See*—
Johnson, William S.; and Bunes, Leonard A., 4,219,489, Cl. 260-397.300.
Buning, Robert; and Bier, Gerhard, to Dynamit Nobel Aktiengesellschaft. Process for coating an inorganic silicatic substrate. 4,219,591, Cl. 427-387.000.
Burg, Carol J. Method for treating burns using an egg yolk oil. 4,219,544, Cl. 424-105.000.
Burke, James E., to Pitney Bowes Inc. Sheet loading and storing assembly. 4,219,192, Cl. 271-160.000.
Burke, Robert: *See*—
Triplett, William C.; Brauer, Walter H.; Burke, Robert; and Morrow, Richard, 4,218,923, Cl. 73-623.000.
Burke, William J.: *See*—
Bloom, Allen; Burke, William J.; and Ross, Daniel L., 4,219,826, Cl. 346-135.100.
Burnetter, Peter W. Ventilating system for votive stands. 4,218,963, Cl. 98-115.00R.
Burnham, Robert D.: *See*—
Scifres, Donald R.; Burnham, Robert D.; and Streifer, William, 4,219,785, Cl. 331-94.50H.
Burr, John D.: *See*—
Shamlian, Ralph B.; and Burr, John D., 4,219,017, Cl. 128-204.260.
Burro-Badger Corporation: *See*—
McPeak, Garold L., 4,219,121, Cl. 212-153.000.
Burroughs Wellcome Co.: *See*—
Krenitsky, Thomas A., 4,219,621, Cl. 435-32.000.
Buscioni, Mauro: *See*—
Arinci, Giovanni; and Buscioni, Mauro, 4,218,804, Cl. 15-174.000.
Butcher, Duane E. Spare wheel apparatus. 4,219,213, Cl. 280-475.000.
Butler, John M., III, to Westinghouse Electric Corp. Bi-directional axial flow blower for pump-storage hydrogenerators. 4,219,746, Cl. 310-61.000.
Byrne & Davidson Doors (N.S.W.) Pty. Limited: *See*—
Hurst, Geoffrey J., 4,219,067, Cl. 160-133.000.
Whitehouse, Martin H., 4,219,174, Cl. 248-71.000.
C. M. Kemp Manufacturing Company, The: *See*—
Zahniser, James A., 4,219,324, Cl. 432-26.000.
C. Plath KG: *See*—
Hoting, Johann-Peter; Rahn, Armin; and Zerver, Hermann-Jochen, 4,218,828, Cl. 33-334.000.
Cablevision Products Corp.: *See*—
French, Terry W., 4,219,693, Cl. 174-135.000.
California Institute of Technology: *See*—
Yen, Shiao-Ping S.; Rembaum, Alan; and Molday, Robert S., 4,219,411, Cl. 209-213.000.
Calundann, Gordon W., to Celanese Corporation. Polyester of 6-hydroxy-2-naphthoic acid, para-hydroxy benzoic acid, aromatic diol, and aromatic diacid capable of readily undergoing melt processing. 4,219,461, Cl. 260-40.00P.
Cam Gears Limited: *See*—
Allen, David H.; Rogers, Peter R.; and Whitney, John, 4,218,933, Cl. 74-422.000.
Cama, Lovji D.: *See*—
Christensen, Burton G.; and Cama, Lovji D., 4,219,462, Cl. 260-245.20R.
Cammack, Travers K., II; and Nyberg, David D., to Raychem Corporation. High voltage insulating compositions containing phosphorus compounds. 4,219,607, Cl. 428-411.000.
Campion, John S.; and Stewart, Gerald D., to Campion, John S. Screen. 4,219,253, Cl. 350-129.000.
Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See*—
Hart, John A.; and Collyer, John C., 4,218,779, Cl. 2-168.000.

Canadair Limited: *See*—
Huvers, Marius E., 4,218,827, Cl. 33-318.000.
Canadian Industries Limited: *See*—
Marz, Horst F., 4,218,861, Cl. 53-138.00A.
Canadian Patents & Development Limited: *See*—
Pinkney, Harold F. L.; and Perratt, Charles I., 4,219,847, Cl. 358-126.000.
Candlish, Stanley M.: *See*—
Horsewell, Henry G.; Green, John D.; Luke, John A.; and Candlish, Stanley M., 4,219,033, Cl. 131-261.00B.
Cannon, Joseph G.: *See*—
Goldberg, Leon I.; Cannon, Joseph G.; and Long, John P., 4,219,568, Cl. 424-330.000.
Canon Kabushiki Kaisha: *See*—
Date, Nobuaki; Uchidoi, Masanori; Aizawa, Hiroshi; Shimizu, Masami; and Takishima, Yoshiyuki, 4,219,260, Cl. 354-23.00D.
Ohkubo, Masharu; Ando, Yujiro; Honma, Toshio; Murakawa, Shuji; Murakami, Katsumi; and Furuichi, Katsushi, 4,219,271, Cl. 355-14.00R.
Sado, Ichiro; Saito, Seiji; and Matsuyama, Shigeru, 4,219,808, Cl. 340-756.000.
Suzuki, Masayuki; Yamamichi, Masayoshi; Murakami, Hiroyasu; and Ito, Tadashi, 4,219,267, Cl. 354-289.000.
Capdeboscq, Bernard, to S.A. Martin. Machine for separating and discharging products in sheet form. 4,219,294, Cl. 414-46.000.
Capehart, Dan B.: *See*—
Slappey, Thomas E.; and Capehart, Dan B., 4,219,257, Cl. 351-1.000.
Caplan, Lew; and Kemper, Robert W. Carpet cleaning and dyeing apparatus. 4,218,900, Cl. 68-205.00R.
Carando Machine Works: *See*—
Rhinefrank, Robert A.; and Sunday, William H., 4,218,983, Cl. 113-1.00E.
Rhinefrank, Robert A.; and Leibovich, Vladimir E., 4,218,984, Cl. 113-1.00E.
Careglio, Giuseppe; Restori, Ettore; and Pecorini, Marcello, to WABCO Westinghouse S.p.A. Air-conditioning system for railroad vehicles. 4,219,071, Cl. 165-23.000.
Carre, Jean J., to Societe Anonyme D.B.A. Braking correction device. 4,219,242, Cl. 303-6.00C.
Carrier Corporation: *See*—
Mount, Gordon L.; and Kirtland, Howard W., 4,219,305, Cl. 415-13.000.
Strasiicka, William A., 4,219,201, Cl. 277-53.000.
Carse, Murray D. Dentine pin. 4,219,620, Cl. 433-225.000.
Carter, Clarence F.; and Mechalas, Emmanuel, to Carter Industries. Method and apparatus for filling valve bags. 4,219,054, Cl. 141-10.000.
Carter Industries: *See*—
Carter, Clarence F.; and Mechalas, Emmanuel, 4,219,054, Cl. 141-10.000.
Carter, James P., to J. P. Carter Co., Inc. Film cartridge. 4,219,266, Cl. 354-275.000.
Carter, Margaret P.; and Hodgson, David, to British Communications Corporation, Ltd. Phase locked loop with rapid phase pull in. 4,219,783, Cl. 331-1.00A.
Cary, George R., Jr.; and Cary, Stocker R. Surgical prep hand cleaning. 4,219,367, Cl. 134-29.000.
Cary, Stocker R.: *See*—
Cary, George R., Jr.; and Cary, Stocker R., 4,219,367, Cl. 134-29.000.
Castoe, John H. Apparatus for removing cam shaft sprocket. 4,218,939, Cl. 81-3.00R.
Cather, Douglas A., Jr., to Garlock Inc. Method and tool for installing shafts through seals. 4,218,813, Cl. 29-450.000.
Cathodic Protection Services, Inc.: *See*—
Speck, Robert M.; and Beil, Lawrence E., 4,219,807, Cl. 340-664.000.
Cavalli, Alfredo. Apparatus for preparing fresh farinaceous pastes. 4,219,318, Cl. 425-190.000.
Cavert Wire Company, Inc.: *See*—
Aronhalt, Herman L., 4,219,052, Cl. 140-140.000.
CBS/Arbiter Limited: *See*—
Arbiter, Ivor D., 4,218,952, Cl. 84-411.00A.
CBS Inc.: *See*—
Rossi, John P., 4,219,838, Cl. 358-21.00R.
Celanese Corporation: *See*—
Barer, Sol J., 4,219,350, Cl. 71-78.000.
Calundann, Gordon W., 4,219,461, Cl. 260-40.00P.
Edelman, Robert; Berardinelli, Frank M.; and Wissbrun, Kurt F., 4,219,527, Cl. 264-540.000.
Slinkard, William E.; and Baylis, Anthony B., 4,219,671, Cl. 562-548.000.
Celanza, Frank V. Dental cast relator. 4,219,329, Cl. 433-58.000.
Cepelinski, Jacob: *See*—
Panizzon, Guido; Cepelinski, Jacob; Cowpland, Michael C. J.; and Wilker, Paul S., 4,219,700, Cl. 179-17.00B.
Ceseri, Pierluigi, to "Autostrade"-Concessioni e Costruzioni Autostrade S.p.A. Scanning barrier for the discrimination and counting of objects and more specifically of vehicles in transit through a laminar barrage of electromagnetic microwaves. 4,219,802, Cl. 340-552.000.
Chaix, Jean-Edmond; Fajeau, Maurice; Madamour, Paul; and Masnou, Christian, to Commissariat a l'Energie Atomique; and Fives-Cail Babcock. Plate-type heat exchanger. 4,219,080, Cl. 165-166.000.
Champion International Corporation: *See*—
Daniels, Vernon E., 4,218,832, Cl. 34-79.000.
Garmon, Ivan E., 4,219,148, Cl. 229-28.00R.
Jaeschke, Harold R.; Patmore, Thomas R.; and Webinger, George, 4,219,145, Cl. 229-8.000.
Kohler, Karl A., 4,219,147, Cl. 229-27.000.
Chang, Long F.; and Kontz, Robert F., to Owens-Illinois, Inc. Apparatus for molding plastic articles. 4,219,322, Cl. 425-547.000.
Chas. S. Tanner Co.: *See*—
Lindemann, Martin K., 4,219,455, Cl. 260-29.6WA.
Chatterji, Debajyoti: *See*—
Breiter, Manfred W.; Chatterji, Debajyoti; King, Randall N.; and Park, Dong-Sil, 4,219,128, Cl. 220-453.000.
Chaumont, Gerard P. L.; Boirin, Jean-Claude A.; and Jouffroy, Jacques J. M. G., to Sperry Corporation. Agricultural machines. 4,218,865, Cl. 56-13.600.
Chemap AG: *See*—
Muller, Hans, 4,219,420, Cl. 210-82.000.
Chemet Research, Inc.: *See*—
Runyon, Robert C., 4,219,004, Cl. 125-15.000.
Chemische Werke Huls AG: *See*—
Obenaus, Fritz; Droste, Wilhelm; Streubel, Wolf; Zolffel, Michael; and Muller, Wolfgang, 4,219,678, Cl. 568-697.000.
Cheng, Chen-yen; and Cheng, Sing-Wang. Distillative freezing process for separating volatile mixtures and apparatuses for use therein. 4,218,893, Cl. 62-537.000.
Cheng, Hsiung, to Merck & Co., Inc. Xanthan gum and locust bean gum in confectionery use. 4,219,582, Cl. 426-578.000.
Cheng, Richard C. M. Model vehicle track section. 4,219,153, Cl. 238-10.00E.
Cheng, Sing-Wang: *See*—
Cheng, Chen-yen; and Cheng, Sing-Wang, 4,218,893, Cl. 62-537.000.
Chery, Marc, to Compagnie Generale de Radiologie. X-ray apparatus for transverse axial tomography. 4,219,734, Cl. 250-445.00T.
Chesler, Ronald B.: *See*—
Dabby, Franklin W.; and Chesler, Ronald B., 4,219,274, Cl. 356-244.000.
Chester, Arthur N., to United States of America, Army. Polarization suppression of parasitic modes. 4,219,786, Cl. 331-94.50C.
Chevron Research Company: *See*—
Hoenke, Karl A., 4,219,536, Cl. 423-393.000.
Singer, Malcolm S., 4,219,673, Cl. 562-602.000.
Vaughan, Ronald J., 4,219,430, Cl. 252-42.700.
Woo, Gar L., 4,219,364, Cl. 106-122.000.
Chiba, Koji: *See*—
Inoue, Osamu; Abe, Masaru; Chiba, Koji; and Miyoshi, Isao, 4,219,601, Cl. 428-222.000.
Chibnik, Sheldon, to Mobil Oil Corporation. Aroyl derivatives of alkenylsuccinic anhydride as lubricant and fuel additives. 4,219,431, Cl. 252-33.400.
Chicago Bridge & Iron Company: *See*—
Hoaglin, Harold B.; Grill, James R.; and Keller, Jack H., 4,219,370, Cl. 148-9.600.
Chiccarelli, Fortunato S., to American Cyanamid Company. 4-Hydroxy,4-biphenylbutyric acid. 4,219,668, Cl. 562-469.000.
Chicopee: *See*—
Surowitz, Philip; and Wetzel, William L., 4,219,600, Cl. 428-196.000.
Chinoin Gyogyszer es Vegyeszeti Termekek Gyara RT: *See*—
Knoll, Josef; Meszaros, Zoltan; Hermecz, Istvan; Fulop, Ferenc; Bernath, Gabor; Virag, Sandor; Nagy, Gabor; and Szentmiklosi, Peter, 4,219,649, Cl. 544-282.000.
Chiu, Herman S., to Union Carbide Corporation. Food casing. 4,219,574, Cl. 426-135.000.
Chloride Group Limited: *See*—
Tatlock, Edwin, 4,219,612, Cl. 429-86.000.
Christensen, Burton G.; and Cama, Lovji D., to Merck & Co., Inc. 6-Methyl penicillins. 4,219,462, Cl. 260-245.20R.
Christiansen, Keith W.; and Reichenbach, Jerry D., to CR Industries. Multiple lip seal. 4,219,205, Cl. 277-208.000.
Christis, Wilhelmus J.: *See*—
Janssen, Peter J. H.; Kolk, Hendrik; and Christis, Wilhelmus J., 4,219,849, Cl. 358-197.000.
Chrysler Corporation: *See*—
Koch, David A.; Moore, Michael G.; and Pawlus, Arthur L., 4,219,706, Cl. 200-4.000.
Scarbro, William D., 4,219,709, Cl. 200-61.540.
Chu, Pak-Jong, to Northern Telecom Limited. Hinge having reproducible bearing friction. 4,218,808, Cl. 16-141.000.
Church, Mark A.; and Jones, Robert E., Jr., to International Business Machines Corporation. Thin film magnetic head assembly. 4,219,854, Cl. 360-123.000.
Ciba-Geigy Corporation: *See*—
Abel, Heinz; and Soiron, Charles, 4,219,332, Cl. 8-532.000.
Beffa, Fabio; and Steiner, Eginhard, 4,219,473, Cl. 260-151.000.
Darms, Roland; Kvita, Vratislav; and Greber, Gerd, 4,219,481, Cl. 260-326.00C.
Drabek, Jozef; Ackermann, Peter; Farooq, Saleem; Gsell, Laurenz; and Kristiansen, Odd, 4,219,564, Cl. 424-305.000.
Hurter, Rudolf, 4,219,472, Cl. 260-145.00B.
Muntwyler, Rene; and de Sousa, Bernardo, 4,219,593, Cl. 428-15.000.
Ramey, Chester E.; and Luzzi, John J., 4,219,464, Cl. 260-45.80N.
Rohringer, Peter, 4,219,605, Cl. 428-361.000.
Stockinger, Friedrich; and Lohse, Friedrich, 4,219,650, Cl. 546-11.000.

White, Howard L.; and Krolewski, Casimir V., 4,219,480, Cl. 548-260.000.
Ciocan, Benjamin, to United States of America, Army. Removable stanchion for cargo bracing purposes. 4,219,229, Cl. 296-43.000.
Claire Corporation AG: *See*—
Somers, Giles N., 4,219,118, Cl. 206-387.000.
Clark & Vicario Corporation: *See*—
Kaiser, Robert G., 4,219,340, Cl. 55-41.000.
Clarke-Gravely Corporation: *See*—
Block, Thomas S., 4,218,798, Cl. 15-49.00R.
Clarke, John L., Jr., to Clarke Outdoor Spraying Company, Inc. Container for releasing dry chemical in a body of water. 4,218,843, Cl. 43-131.000.
Clarke Outdoor Spraying Company, Inc.: *See*—
Clarke, John L., Jr., 4,218,843, Cl. 43-131.000.
Clarke, Peter J. Magnetron sputter apparatus. 4,219,397, Cl. 204-192.00R.
Clavenna, Le Roy R.: *See*—
Wolfs, Denise Y.; Clavenna, Le Roy R.; Eakman, James M.; and Kalina, Theodore, 4,219,338, Cl. 48-197.00R.
Cleva, William. Hand-actuated chain saw. 4,218,820, Cl. 30-166.00R.
Clifford, Jack R. Implement for cleaning tubular culverts. 4,218,803, Cl. 15-104.30R.
Coar, Ronald, to Spooner Edmeston Engineering Limited. Float treatment apparatus. 4,218,833, Cl. 34-156.000.
Coates, John T., to Kendall Company, The. Bandage. 4,219,019, Cl. 128-156.000.
Cohee, Robert J. Ice fishing liner. 4,218,840, Cl. 43-4.000.
Cohn, Bernard. Vacuum device for hair. 4,218,806, Cl. 15-402.000.
Cole, Edwin L. Pet collar. 4,218,991, Cl. 119-106.000.
Colegrove, George T., to Merck & Co., Inc. Sag resistant Portland cement compositions. 4,219,362, Cl. 106-92.000.
Colgate-Palmolive Company: *See*—
Patience, Donald; and Karami, Hamzeh, 4,219,024, Cl. 128-287.000.
Collias, George J., to Kepros-Ganes Company. Method for preventing buckle of beer-can tops during pasteurization. 4,219,578, Cl. 426-407.000.
Collins, Calvin E. Treatment of infectious keratoconjunctivitis in animals. 4,219,545, Cl. 424-181.000.
Collins, John D., to Raytheon Company. Signal processor. 4,219,813, Cl. 343-7.700.
Collum, Paulette; and Fager, Earl E. C., to Abbott Laboratories. Fortimicin AO. 4,219,642, Cl. 536-17.00R.
Collyer, John C.: *See*—
Hart, John A.; and Collyer, John C., 4,218,779, Cl. 2-168.000.
Comfort, Gary, to Powers Manufacturing, Inc. Apparatus for inspecting plastic containers. 4,218,913, Cl. 73-45.200.
Commissariat a l'Energie Atomique: *See*—
Chaix, Jean-Edmond; Fajeau, Maurice; Madamour, Paul; and Masnou, Christian, 4,219,080, Cl. 165-166.000.
Guidez, Joel; and Pradel, Maurice, 4,219,385, Cl. 176-40.000.
Compagnie Generale de Radiologie: *See*—
Chery, Marc, 4,219,734, Cl. 250-445.00T.
Compagnie Neerlandaise de l'Azote: *See*—
Niks, Anton; Van Hijfte, Willy H. P.; and Goethals, Rafael A. J., 4,219,589, Cl. 427-213.000.
Condor: *See*—
Kogan, Henry, 4,218,792, Cl. 5-436.000.
Conklin, Christine, to Herculite Protective Fabrics Corporation. Electrically conductive/antistatic sheeting. 4,219,602, Cl. 428-244.000.
Conoco, Inc.: *See*—
Mack, Mark P.; and Libbey, William J., 4,219,639, Cl. 528-494.000.
Container Corporation of America: *See*—
Skaggs, Boyd T.; and Patton, Doyle W., 4,219,146, Cl. 229-15.000.
Continental Gummi-Werke Aktiengesellschaft: *See*—
Sponing, Gunter, 4,219,595, Cl. 428-40.000.
Contrology Techniques Limited: *See*—
Macfarlane, Alistair A.; and McKemmie, Ross C., 4,219,769, Cl. 322-28.000.
Conwed Corporation: *See*—
Valsvik, Donald J., 4,219,101, Cl. 181-286.000.
Cooke, Robert S.; Baker, Josefina T.; and Sifniades, Stylianos, to Allied Chemical Corporation. Process for poly (bisphenol A/terephthalate/carbonate) using pyridine reaction medium. 4,219,635, Cl. 528-182.000.
Cooper, Paul V.; and Marsh, Anthony, to Plessey Handel und Investments AG. Magnetic domain devices. 4,219,882, Cl. 365-2.000.
Cor Tech Research Ltd.: *See*—
Vasishth, Ramesh C., 4,219,634, Cl. 528-139.000.
Cordell, Robert R., to Bell Telephone Laboratories, Incorporated. Active variable equalizer. 4,219,788, Cl. 333-28.00R.
Corning Glass Works: *See*—
Armistead, William H.; and Lachman, Irwin M., 4,219,344, Cl. 65-18.000.
Johnson, Donald M., 4,219,025, Cl. 128-303.100.
Cory Food Services, Inc.: *See*—
Petry, Stanton H., 4,218,965, Cl. 99-283.000.
Petry, Stanton H., 4,218,966, Cl. 99-295.000.
Couch, William D.; and Minor, Richard G., to International Business Machines Corporation. Dual threshold comparator circuit. 4,219,152, Cl. 235-463.000.
Coulter Electronics, Inc.: *See*—
Runck, Alan H.; Armstrong, Douglas; and Hutchisson, James T., 4,219,440, Cl. 252-408.000.
Cowpland, Michael C. J.: *See*—
Panizzon, Guido; Cepelinski, Jacob; Cowpland, Michael C. J.; and Wilker, Paul S., 4,219,700, Cl. 179-17.00B.
CR Industries: *See*—
Christiansen, Keith W.; and Reichenbach, Jerry D., 4,219,205, Cl. 277-208.000.
Crail, Timothy A., to Hughes Aircraft Company. Coupling compensation device for circularly polarized horn antenna array. 4,219,820, Cl. 343-756.000.
Cramer, Heinz; Handel, Hubert; Schefold, Manfred; Schmitt, Hermann; and Schoening, Josef, to Hochtemperatur-Reaktorbau GmbH. Driving apparatus for an absorber rod. 4,219,384, Cl. 176-36.00C.
Crane Co.: *See*—
Crits, George J., 4,219,414, Cl. 210-27.000.
Crawford, Dennis W.; and Turner, Larry G., to Bristol Products, Inc. Drain assembly for a lavatory basin. 4,218,785, Cl. 4-203.000.
Crawford, Dennis W.; and Turner, Larry G., to Bristol Products, Inc. Faucet valve assembly with friction drag. 4,219,184, Cl. 251-297.000.
Crits, George J., to Crane Co. Method for fluid purification and deionization. 4,219,414, Cl. 210-27.000.
Crivello, James V., to General Electric Company. Photoinitiators. 4,219,654, Cl. 546-342.000.
Cross, Peter E.: *See*—
Barnish, Ian T.; Cross, Peter E.; Danilewicz, John C.; Morville, Malcolm; and Page, Michael G., 4,219,566, Cl. 424-317.000.
Cruccu, Antonio, to Industria Macchine Impianti. Apparatus for the production of large glass containers. 4,219,346, Cl. 65-207.000.
Crucible Inc.: *See*—
Yolton, Charles F.; and Froes, Francis H., 4,219,357, Cl. 75-221.000.
Csizi, Gotthard: *See*—
Treptow, Wolfram; Wunsch, Gerd; Kiener, Volker; Meyer, Hermann; and Csizi, Gotthard, 4,219,400, Cl. 204-266.000.
Cucinella, Salvatore, to Anic S.p.A. Synthesizing mixed hydride alkoxyderivatives of aluminum and alkaline-earth metals, and products obtained thereby. 4,219,491, Cl. 260-448.0AD.
Cumming, Noel N. Modular transfer machine. 4,218,815, Cl. 29-563.000.
Cundy, Colin S. Mineral products. 4,219,609, Cl. 428-446.000.
Cunningham, Richard N.; and Smith, Douglas D., to Johns-Manville Corporation. Apparatus for forming thermal insulation blocks. 4,218,962, Cl. 93-84.00R.
Czajka, Ronald J., to Fraser Sweatman, Inc. Scavenger valve attachment for inhalation sedation system mask. 4,219,020, Cl. 128-207.130.
Czieslа, Manfred J.; and Mueller, Kurt F., to United States of America, Navy. Monopropellant composition. 4,219,374, Cl. 149-75.000.
D-H Titanium Company, The: *See*—
Johnson, David R., 4,219,401, Cl. 204-284.000.
Dabby, Franklin W.; and Chesler, Ronald B., to Times Fiber Communications, Inc. Apparatus and method for packaging optical fibers. 4,219,274, Cl. 356-244.000.
Dadson, Roland, to Hozelock Limited. Spray nozzles for spraying liquids. 4,219,162, Cl. 239-583.000.
Dahmen, Theo: *See*—
Hartlapp, Gerhard; Kowalski, Werner; Queck, Robert; and Dahmen, Theo, 4,219,533, Cl. 422-200.000.
Dai Nippon Toryo Co., Ltd.: *See*—
Hayashi, Toshiharu; and Kurosawa, Kenji, 4,219,358, Cl. 106-1.170.
Daicel Ltd.: *See*—
Numaguchi, Toru; and Murabayashi, Katuyoshi, 4,218,959, Cl. 92-103.0SD.
Daido Tokushuko Kabushiki Kaisha: *See*—
Fujiwara, Tatsuo; Abeyama, Shozo; Ishida, Kiyohito; and Nakamura, Sadayuki, 4,219,356, Cl. 75-126.00L.
Daido, Toshihiko; and Kunimatsu, Hiroshi, to Koyo Seiko Company Limited; and Koyo Machine Industries Company Limited. Pattern generating system for use in electronic sewing machines. 4,218,982, Cl. 112-158.00E.
Daido, Yoshiaki: *See*—
Fujino, Yoshikazu; and Daido, Yoshiaki, 4,219,306, Cl. 415-62.000.
Daigo, Kaoru: *See*—
Ohsumi, Atushi; Yamagishi, Yoshinao; Daigo, Kaoru; Yamamoto, Tomio; and Yamada, Katsuya, 4,219,844, Cl. 358-106.000.
Daimler-Benz Aktiengesellschaft: *See*—
Albrecht, Wilhelm; Riemer, Bernd; and Allert, Anton, 4,218,937, Cl. 74-513.000.
Grabner, Christian; Krugener, Rolf; Feichtiger, Dieter; Hoffmann, Rudiger; and Kurth, Hermann W., 4,219,227, Cl. 292-216.000.
Katz, Klaus; Abt, Reinhold; Bordovsky, Jaromir; Pfundstein, Wolfgang; and Wingert, Georg, 4,218,958, Cl. 91-434.000.
Muller, Alf; and Loper, Bernd, 4,219,241, Cl. 301-6.0CS.
Daisy Systems Holland B.V.: *See*—
Morsing, Gijsbertus B., 4,219,765, Cl. 318-561.000.
Dalke, James, to Arvin Industries, Inc. Radial sweep generator circuit. 4,219,763, Cl. 315-378.000.
Danckert, Hermann; and Willmann, Michael, to Volkswagenwerk Aktiengesellschaft. Sound insulated internal combustion engine. 4,219,002, Cl. 123-198.00E.
Danfors, Per; Fahlen, Nils; and Nerf, Owe, to ASEA Aktiebolag. Protective device for capacitor bank. 4,219,856, Cl. 361-15.000.
Daniels, Vernon E., to Champion International Corporation. Apparatus for processing wood products using heat from a boiler for indirectly heating drying gas. 4,218,832, Cl. 34-79.000.
Daniels, Wiley E.: *See*—
Iacoviello, John G.; and Daniels, Wiley E., 4,219,454, Cl. 260-29.60T.

Danilewicz, John C.: *See—*
Barnish, Ian T.; Cross, Peter E.; Danilewicz, John C.; Morville, Malcolm; and Page, Michael G., 4,219,566, Cl. 424-317.000.
Darling Store Fixtures: *See—*
Harig, Robert G., 4,219,175, Cl. 248-125.000.
Darms, Roland; Kvita, Vratislav; and Greber, Gerd, to Ciba-Geigy Corporation. Crosslinkable bis-imidyl derivatives. 4,219,481, Cl. 260-326.00C.
Dart Industries Inc.: *See—*
Hodapp, Norbert J., 4,218,814, Cl. 29-450.000.
Storm, Roger S., 4,219,629, Cl. 525-167.000.
Date, Nobuaki; Uchidoi, Masanori; Aizawa, Hiroshi; Shimizu, Masami; and Takishima, Yoshiyuki, to Canon Kabushiki Kaisha. Camera having a release control device. 4,219,260, Cl. 354-23.00D.
Dauvergne, Jean L. R., to Societe Anonyme Francaise du Ferodo. Assisted braking device. 4,218,887, Cl. 60-550.000.
David, Gerard R., to U.S. Philips Corporation. Semiconductor device having a number of series-arranged photosensitive cells. 4,219,368, Cl. 136-89.0MS.
David-Malig, Manuel A.: *See—*
United States of America, Naticnal Aeronautics and Space Administration; and David-Malig, Manuel A., 4,218,941, Cl. 82-1.00C.
Dayton, Arnold J. Weighing device. 4,219,090, Cl. 177-208.000.
DCA Food Industries, Inc.: *See—*
Kaufman, Harold B., Jr.; and McCarthy, John P., 4,219,716, Cl. 219-10.55R.
Dea, Iain C. M.; and Pillai, Devamanohari, to Thomas J. Lipton, Inc. Ice confections and processes for their preparation. 4,219,581, Cl. 426-565.000.
DeBacker, Dennis: *See—*
Birilli, Joseph A.; DeBacker, Dennis; and DiStefano, Carl, 4,219,698, Cl. 179-5.00P.
DeCanto, Joseph F.; and Griffey, Deborah L. Mathematics game board apparatus. 4,219,196, Cl. 273-126.00R.
de Cointet de Fillain, Paul: *See—*
Bazile, Yves; de Cointet de Fillain, Paul; and Pigerol, Charles, 4,219,482, Cl. 549-68.00A.
Deconinck, Didier, to Allibert Exploitation. Caddy or holder for dental accessories. 4,219,035, Cl. 132-84.00D.
DeCristofaro, Nicholas J.; Freilich, Alfred; and Nathasingh, Davidson M., to Allied Chemical Corporation. Iron-metalloid amorphous alloys for electromagnetic devices. 4,219,355, Cl. 75-123.00B.
Deere & Company: *See—*
Demorest, Donald W.; and Rolfes, Marlan J., 4,218,934, Cl. 74-473.00R.
Mutziger, John S., 4,218,916, Cl. 73-359.00R.
Schafer, Richard A., 4,219,212, Cl. 280-460.00A.
Waggoner, Van E., 4,218,936, Cl. 74-512.000.
DeGeorge, Charles W., to Exxon Research & Engineering Co. Integration of stripping of fines slurry in a coking and gasification process. 4,219,402, Cl. 208-8.0LE.
Deiss, Siegfried: *See—*
Hoffmann, Friedrich; Grafe, Werner; Deiss, Siegfried; and Schlotterer, Willy, 4,219,292, Cl. 407-63.000.
Delaunay, Jean, to Societe Anonyme D.B.A. Disc brake and a noise-reducing spring for such a brake. 4,219,105, Cl. 188-73.500.
Demag A.G.: *See—*
Schulte, Uwe, 4,219,694, Cl. 174-156.000.
de Mon, Bob: *See—*
Stuart, Eric J.; and de Mon, Bob, 4,219,390, Cl. 204-54.00R.
Demorest, Donald W.; and Rolfes, Marlan J., to Deere & Company. Power transmission control for a pull-type implement. 4,218,934, Cl. 74-473.00R.
Dennison Manufacturing Company: *See—*
Uhl, Robert J.; and Schwarz, Alexander A., 4,218,971, Cl. 101-35.000.
DePuy, Robert P.; and Leitten, Arthur H., Jr., to General Electric Company. Overcurrent relay apparatus. 4,219,858, Cl. 361-93.000.
DePuy, Robert P., to General Electric Company. Overcurrent relay apparatus. 4,219,860, Cl. 361-94.000.
Derossi, Piero M. Visual-display device with error correction. 4,218,822, Cl. 33-1.00D.
de Rougemont, Christian, to Isomat. Articulated coupling device for the boom of a sailing boat. 4,219,284, Cl. 403-58.000.
DeSantis, Albert. Apparatus for controlling insects. 4,219,884, Cl. 367-139.000.
DeSimone, Robert S., to Hercules Incorporated. Propene trimer and tetramer oximes in perfumes 4,219,450, Cl. 252-522.00R.
de Sousa, Bernardo: *See—*
Muntwyler, Rene; and de Sousa, Bernardo, 4,219,593, Cl. 428-15.000.
Desposato, Francis E.; and Hessler, Edward J., to Upjohn Company, The. Process for preparing erythromycin succinate. 4,219,641, Cl. 536-9.000.
Detectors, Inc.: *See—*
Rubey, Ulyss R., 4,219,708, Cl. 200-61.470.
Detering, Richard L., to Westinghouse Electric Corp. Phase detection system using sample and hold technique, and phase locked loop using such phase detection system. 4,219,784, Cl. 331-27.000.
Detroit, William J., to American Can Company. Lignosulfonate derivatives. 4,219,471, Cl. 260-124.00R.
Deutsch, Emmanuel. Immunochemical diagnostic method for gastric cancer. 4,219,539, Cl. 424-8.000.
Deutsche Gold- und Silber Scheideanstalt vormals Roessler: *See—*
Langer, Manfred, 4,219,456, Cl. 260-33.40R.
DeVisser, Richard B., to Dover Corporation. Isolating pressure sensor. 4,218,926, Cl. 73-730.000.
Devriese, Thierry E. G.: *See—*
Allemeersch, Jozef R. G.; and Devriese, Thierry E. G., 4,218,864, Cl. 56-11.200.
Dewey, George G.: *See—*
Seidel, Bernd; and Dewey, George G., 4,218,794, Cl. 7-138.000.
D'Haeyer, Andre H. L., to N.V. Raychem S.A. Heat recoverable article. 4,219,051, Cl. 138-178.000.
D'Huys, Rene N. J.: *See—*
Boyen, Lodewijk J. T.; and D'Huys, Rene N. J., 4,216,898, Cl. 68-12.00R.
Diamond, Julius; and Zalipsky, Jerome J., to William H. Rorer, Inc. Amidinoureas for lowering blood pressure. 4,219,567, Cl. 424-322.000.
Diamond Shamrock Corporation: *See—*
Babinsky, Andrew D.; Hora, Charles J.; Peters, Edward J.; and Zeman, Wayne P., 4,219,394, Cl. 204-98.000.
Dickakian, Ghazi, to Exxon Research & Engineering Co. Vacuum or steam stripping aromatic oils from petroleum pitch. 4,219,404, Cl. 208-39.000.
DiDomizio, Robert A., Jr., to Honeywell Inc. Differential pressure transmitter with pressure sensor protection. 4,218,925, Cl. 73-706.000.
Dietz, Erwin; Grossmann, Max; Gutbrod, Robert; and Maikowski, Michael, to Hoechst Aktiengesellschaft. Pigment dispersions and their use for the pigmenting of hydrophilic and hydrophobic media. 4,219,365, Cl. 106-308.00Q.
DiStefano, Carl: *See—*
Birilli, Joseph A.; DeBacker, Dennis; and DiStefano, Carl, 4,219,698, Cl. 179-5.00P.
Dixon, George D., to Westinghouse Electric Corp. Adherent coating for entrapping contamination particles in gas-insulated electrical apparatus. 4,219,366, Cl. 134-4.000.
Djordjevic, Nebojsa: *See—*
Rucman, Rudolf; and Djordjevic, Nebojsa, 4,219,555, Cl. 424-250.000.
Dr. E. Fresenius, Chem.-Pharm. Industrie KG: *See—*
Reul, Helmut; and Ghista, Dhanjoo N., 4,218,783, Cl. 3-1.500.
Dr. Ing. h.c.F. Porsche Aktiengesellschaft: *See—*
Lapine, Anatole, 4,219,230, Cl. 296-216.000.
Doi, Shunichi; and Kamogawa, Masatake, to Nitto Chemical Industry Co., Ltd.; and Mitsubishi Rayon Co., Ltd. Process for preparing highly pure-2-acrylamido-2-methylpropanesulfonic acid. 4,219,498, Cl. 260-513.00N.
Dolhyj, Serge R.; and Velenyi, Louis J., to Standard Oil Company. Hydroalkylation of benzene and analogs. 4,219,687, Cl. 585-267.000.
Dolhyj, Serge R.: *See—*
Milberger, Ernest C.; Dolhyj, Serge R.; and Bremer, Noel J., 4,219,484, Cl. 260-346.750.
Domann, Helmut: *See—*
Locher, Johannes; and Domann, Helmut, 4,219,000, Cl. 123-357.000.
Donermeyer, Donald D.; and Martins, Joseph G., to Monsanto Company. Block copolymer hot melt adhesive compositions. 4,219,458, Cl. 260-40.00R.
Donermeyer, Donald D.; and Martins, Joseph G., to Monsanto Company. Block copolymer hot melt adhesive compositions. 4,219,459, Cl. 260-40.00R.
Donermeyer, Donald D.; and Martins, Joseph G., to Monsanto Company. Block copolymer hot melt adhesive composition. 4,219,460, Cl. 260-40.00R.
Dorda, Gerhard; and Eisele, Ignaz, to Siemens Aktiengesellschaft. Field effect transistor having a surface channel and its method of operation. 4,219,829, Cl. 357-23.000.
Doring, Hermann, to Siemens Aktiengesellschaft. Third rail system for track bound transport means. 4,219,108, Cl. 191-29.00R.
Dormehl, Erich, to Heyligenstaedt & Comp. Werkzeugmaschinenfabrik GmbH. Machine tools. 4,218,816, Cl. 29-568.000.
Dorsman, Adrian K., to Rockwell International Corporation. Detection system for ring laser gyro. 4,219,276, Cl. 356-350.000.
Dover Corporation: *See—*
DeVisser, Richard B., 4,218,926, Cl. 73-730.000.
Dow Chemical Company, The: *See—*
Anand, Joginder N.; Revak, Timothy T.; and Tsang, Floris Y., 4,219,613, Cl. 429-104.000.
Groninger, Greg D., 4,219,725, Cl. 219-272.000.
Rulf, Donald C.; and Gurnee, Edward F., 4,219,630, Cl. 525-243.000.
West, Walter H.; and Prueter, E. D., 4,219,046, Cl. 137-375.000.
Drabek, Jozef; Ackermann, Peter; Farooq, Saleem; Gsell, Laurenz; and Kristiansen, Odd, to Ciba-Geigy Corporation. Vinylcyclopropanecarboxylic acid-3-phenoxy-α-vinylbenzyl esters, processes for producing them, and their use in combating pests. 4,219,564, Cl. 424-305.000.
Draft Systems, Inc.: *See—*
Fallon, Merton R.; and Froehler, John R., 4,219,040, Cl. 137-68.00R.
Dragerwerk Aktiengesellschaft: *See—*
Lubitzsch, Wolfgang; Schinkmann, Manfred; and Rohling, Holmer, 4,219,038, Cl. 137-7.000.
Draper, Weston E., Jr., to Norton Company. Earplug unit with inserter and tie. 4,219,018, Cl. 128-152.000.
Dravo Corporation: *See—*
Karnofsky, George B., 4,219,470, Cl. 260-123.500.
Ramirez, Ernest R.; and Ramadorai, Gopalan, 4,219,416, Cl. 210-44.000.

Ramirez, Ernest R., 4,219,417, Cl. 210-44.000.
Drepin, Nikolai F.: *See—*
Tokar, Vladimir A.; Zubik, Maria I.; Baklanov, Grigory M.; Matygin, Nikolai F.; Ustinov, Valentin S.; Kolesnikov, Anatoly V.; Gashenko, Stanislav I.; Rogatkin, Alexandr A.; Khlopkov, Leonid P.; Mikheeva, Vera I.; Lekalova, Lidia I.; Drepin, Nikolai F.; Feofanov, Lev P.; Khodotova, Nina E.; Shevchenko, Ivan I.; Telina, Larisa A.; Garmash, Vladimir I.; and Frantsevich, Andrei M., 4,219,363, Cl. 106-100.000.
Drobish, James L.; and Gougeon, Thomas W., to Procter & Gamble Company, The. Vaginal contraceptive. 4,219,016, Cl. 128-130.000.
Droste, Wilhelm: *See—*
Obenaus, Fritz; Droste, Wilhelm; Streubel, Wolf; Zolffel, Michael; and Muller, Wolfgang, 4,219,678, Cl. 568-697.000.
Druschel, William O. Protective cover for shackle lock. 4,218,902, Cl. 70-55.000.
Dubur, Gunar Y.: *See—*
Kastron, Valeria V.; Vitolin, Rasma O.; Fialkov, Jury A.; Shelyazhenko, Svetlana V.; Dubur, Gunar Y.; Kimenis, Agris A.; and Yagupolsky, Lev M., 4,219,653, Cl. 546-322.000.
Duckett, Frederick L., to Stothert & Pitt Limited. Container-handling spreader beam or the like. 4,219,228, Cl. 294-81.0SF.
Ducresot, Pierre; and Archer, Catherine, to S.A.R.L. dite: F.M.C. Fabrications Metallique de Cizely. Metallic ladders. 4,219,102, Cl. 182-220.000.
Duggins, Richard W., to S. & W. Framing Supplies, Inc. Miter chopper attachment for measuring picture frame molding. 4,219,061, Cl. 144-217.000.
Duke, James G. Radial arm saw alignment tool. 4,218,826, Cl. 33-185.00R.
Dunlop, Andrew P., to Quaker Oats Company, The. Bis(hydroxymethylfurfuryl)butylamine and method of preparation. 4,219,485, Cl. 260-347.700.
Dunlop, Andrew P., to Quaker Oats Company, The. N,N-bis(5-hydroxymethylfurfuryl)methylamine and process of preparation. 4,219,486, Cl. 260-347.700.
Dunlop, Andrew P., to Quaker Oats Company, The. Tris[5-hydroxymethylfurfuryl]amine and process of preparation. 4,219,487, Cl. 260-347.700.
Du Pont de Nemours, E. I., and Company: *See—*
Ebersole, Richard C., 4,219,335, Cl. 23-230.00B.
Nielsen, Norman A.; and Rao, V. N. Mallikarjuna, 4,219,509, Cl. 568-473.000.
Rajagopalan, Parthasarathi, 4,219,550, Cl. 424-246.000.
Simms, John A., 4,219,632, Cl. 526-218.000.
Durant, Graham J.; Ganellin, Charon R.; and Sach, George S., to Smith Kline & French Laboratories Limited. Alkoxy pyridyl substituted alkanes. 4,219,553, Cl. 424-250.000.
DWA Associates Inc.: *See—*
Brouthers, Paul E., 4,218,839, Cl. 42-65.000.
Dynacast International Limited: *See—*
Greenwood, David, 4,219,068, Cl. 164-316.000.
Dynamit Nobel Aktiengesellschaft: *See—*
Buning, Robert; and Bier, Gerhard, 4,219,591, Cl. 427-387.000.
E. R. Squibb & Sons, Inc.: *See—*
Varma, Ravi K., 4,219,488, Cl. 260-397.100.
Eads, Charles L., to Adams Rite Manufacturing Co. Lock mechanism. 4,218,903, Cl. 70-107.000.
Eakman, James M.: *See—*
Wolfs, Denise Y.; Clavenna, Le Roy R.; Eakman, James M.; and Kalina, Theodore, 4,219,338, Cl. 48-197.00R.
Eastman Kodak Company: *See—*
Frishberg, Mark D., 4,219,475, Cl. 260-158.000.
Stahly, Frederick A., 4,219,614, Cl. 430-38.000.
Tersteeg, Glenn E.; Nosco, Louis C.; Meyer, Robert J.; and Whitcomb, Rodney J., 4,219,529, Cl. 422-65.000.
Weemes, Doyle A.; and Seymour, Robert W., 4,219,628, Cl. 525-166.000.
Ebersole, Richard C., to Du Pont de Nemours, E. I., and Company. Immunochemical testing using tagged reagents. 4,219,335, Cl. 23-230.00B.
Edagawa, Setsuji: *See—*
Shibazaki, Hiroji; Edagawa, Setsuji; and Okamoto, Yoshinaga, 4,219,590, Cl. 427-215.000.
Edelman, Robert; Berardinelli, Frank M.; and Wissbrun, Kurt F., to Celanese Corporation. Extrusion grade polyethylene terephthalate. 4,219,527, Cl. 264-540.000.
Edwards, Michael L., to Richardson-Merrell Inc. 7-[[Amino(1,3-dihydrobenzo[c]thienyl)acetyl]amino]cephalosporin derivatives. 4,219,648, Cl. 544-21.000.
Egami, Kazuhito: *See—*
Ban, Itsuki; Shiraki, Manabu; and Egami, Kazuhito, 4,219,750, Cl. 310-154.000.
Ban, Itsuki; Shiraki, Manabu; and Egami, Kazuhito, 4,219,751, Cl. 310-154.000.
Eguchi, Shusaku: *See—*
Oba, Yoichi; Kano, Tsuyoshi; Hayashi, Masaaki; Takada, Hiroshi; Kanda, Katuzo; and Eguchi, Shusaku, 4,219,587, Cl. 427-64.000.
Eisele, Ignaz: *See—*
Dorda, Gerhard; and Eisele, Ignaz, 4,219,829, Cl. 357-23.000.
Ekman Engineering AG: *See—*
Ekman, Kjell R., 4,219,048, Cl. 137-614.030.
Ekman, Kjell R., to Ekman Engineering AG. Coupling device. 4,219,048, Cl. 137-614.030.
Eldec Corporation: *See—*
Little, William R., 4,219,740, Cl. 307-116.000.
Electric Power Research Institute, Inc.: *See—*
Breiter, Manfred W.; Chatterji, Debajyoti; King, Randall N.; and Park, Dong-Sil, 4,219,128, Cl. 220-453.000.
Temple, Victor A. K., 4,219,833, Cl. 357-38.000.
Eli Lilly and Company: *See—*
Miesel, John L., 4,219,557, Cl. 424-263.000.
Zimmerman, Dennis M.; and Marshall, Winston S., 4,219,652, Cl. 546-144.000.
Ellis, James M. H., to Imperial Chemical Industries Limited. Hydraulic fluid compositions based on mixed glycol ether-glycol boric acid esters. 4,219,434, Cl. 252-78.100.
Eltex-Elektronik H. Grunenfelder El. Ing.: *See—*
Grunenfelder, ; and Kunzig, , 4,219,864, Cl. 361-228.000.
Eltzschig, Rudolf: *See—*
Stuben, Werner; Eltzschig, Rudolf; and Friedrichs, Konrad, 4,219,320, Cl. 425-345.000.
Emerson Electric Co.: *See—*
Babb, Larry F.; and Noveske, Walter J., 4,218,802, Cl. 15-104.3SN.
Lewis, John G., 4,219,245, Cl. 308-29.000.
Emmerich, Werner S., to Westinghouse Electric Corp. High compression puffer circuit interrupter. 4,219,712, Cl. 200-148.00A.
Enemark, Robert B., to American District Telegraph Company. Dual alarm gas detector. 4,219,806, Cl. 340-632.000.
Engelmann, Rudolph H., to Von Bank, James; and Adams, John W., part interest to each. Power supply. 4,219,872, Cl. 363-126.000.
Engels, Walter, to Milliken Research Corporation. Pile fabric sculpturing apparatus. 4,218,810, Cl. 26-16.000.
Ensminger, Dale, to Battelle Development Corporation. Acoustic inspection of solder joints. 4,218,922, Cl. 73-588.000.
Enso-Gutzeit Osakeyhtio: *See—*
Surakka, Jorma; Pokkinen, Martti; Makkonen, Jorma; Valkama, Erkki; Karkkainen, Viljo; Rabina, Pekka; and Matula, Jouni, 4,219,166, Cl. 241-246.000.
Envirogenics Systems Company: *See—*
Sweeny, Keith H., 4,219,419, Cl. 210-59.000.
Erckel, Rudiger: *See—*
Gunther, Dieter; Erckel, Rudiger; and Fruhbeis, Horst, 4,219,651, Cl. 546-70.000.
Eriksson, Kent; and Zetterlund, Uno, to ASEA Aktiebolag. Device for the prestressing of concentric cylinders. 4,219,792, Cl. 336-60.000.
Ernst, Richard J.; and Williams, Elbert E., Jr., to Illinois Tool Works Inc. Drill bit with fastener-driving collar assembly. 4,218,795, Cl. 7-158.000.
Esch, Ronald P.; Folsom, Robert M.; Liu, Cheng-Yih; Rideout, Vincent L.; Soderman, Donald A.; and Wenning, G. Thomas, to International Business Machines Corporation. One-device monolithic random access memory and method of fabricating same. 4,219,834, Cl. 357-41.000.
Escher Wyss GmbH: *See—*
Schnell, Hans, 4,219,381, Cl. 162-4.000.
Escher Wyss Limited: *See—*
Lehmann, Rolf; and Stotz, Wolf-Gunter, 4,218,905, Cl. 72-21.000.
Esker, Andrew T., to McDonnell Douglas Corporation. Missile roll position processor. 4,219,170, Cl. 244-3.140.
Esposito, Joseph P.; and Alexander, Mesta M., to Esposito, Joseph P. Pizza stand. 4,218,979, Cl. 108-106.000.
Esquire, Inc.: *See—*
Mustoe, Edward H., 4,219,761, Cl. 315-307.000.
Estes, Michael J., to RTE Corporation. Multiple range inverse time overcurrent relay. 4,219,859, Cl. 361-93.000.
Estes, Nelson N.: *See—*
Park, Robert H.; Klas, Harold W.; and Estes, Nelson N., 4,218,987, Cl. 114-245.000.
Etablissements Francois Salomon et Fils: *See—*
Gertsch, Ulrich, 4,219,217, Cl. 280-629.000.
Etablissements Nativelle S.A.: *See—*
Jarreau, Francois X.; and Koenig, Jean J., 4,219,549, Cl. 424-241.000.
Ethington, Donald, to Goodpasture, Inc. Method for removing nitrogen oxides from a gas stream. 4,219,534, Cl. 423-235.000.
Ethyl Corporation: *See—*
Ihrman, Kryn G.; and Brandt, Manuel, 4,219,502, Cl. 260-578.000.
Wollensak, John C.; and Lucast, Donald H., 4,219,503, Cl. 260-578.000.
Evans, James T.; and Allen, Robert L., to said James T. Evans; by said Robert L. Allen. Bird-calling device. 4,218,845, Cl. 46-180.000.
Ewald, Otto: *See—*
Biermann, Peter; Ewald, Otto; Feucht, Rudi; and Schmidt, Manfred, 4,219,215, Cl. 280-615.000.
Exxon Nuclear Company, Inc.: *See—*
Osborne, Jon L.; and Flora, Barney S., 4,219,386, Cl. 176-78.000.
Exxon Research & Engineering Co.: *See—*
DeGeorge, Charles W., 4,219,402, Cl. 208-8.0LE.
Dickakian, Ghazi, 4,219,404, Cl. 208-39.000.
Girgenti, Salvatore J.; and Gardiner, John B., 4,219,432, Cl. 252-51.50A.
Savini, Charles, 4,219,685, Cl. 568-917.000.
Wheelock, Kenneth S., 4,219,447, Cl. 252-466.0PT.
Wolfs, Denise Y.; Clavenna, Le Roy R.; Eakman, James M.; and Kalina, Theodore, 4,219,338, Cl. 48-197.00R.
Fager, Earl E. C.: *See—*
Collum, Paulette; and Fager, Earl E. C., 4,219,642, Cl. 536-17.00R.
Goldstein, Alma W.; and Fager, Earl E. C., 4,219,644, Cl. 536-17.00R.

Fahlen, Nils: *See*—
Danfors, Per; Fahlen, Nils; and Nerf, Owe, 4,219,856, Cl. 361-15.000.
Fajeau, Maurice: *See*—
Chaix, Jean-Edmond; Fajeau, Maurice; Madamour, Paul; and Masnou, Christian, 4,219,080, Cl. 165-166.000.
Fajen, Lyle A.; Malcolm, Robert B.; and McDonald, Thomas W., to Motorola, Inc. Bullet hit indicator scoring system. 4,219,815, Cl. 343-12.0MD.
Falk, David C. Timber to firewood processing machine. 4,219,057, Cl. 144-3.00K.
Fallon, Merton R.; and Froehler, John R., to Draft Systems, Inc. Rupture disc safety valve. 4,219,040, Cl. 137-68.00R.
Fang, Michael S., to Teledyne Industries, Inc. Homogenization of zirconium alloys. 4,219,372, Cl. 148-133.000.
Farooq, Saleem: *See*—
Drabek, Jozef; Ackermann, Peter; Farooq, Saleem; Gsell, Laurenz; and Kristiansen, Odd, 4,219,564, Cl. 424-305.000.
Farr, Glyn P. R., to Girling Limited. Hydraulic power systems for vehicle braking and levelling systems. 4,218,882, Cl. 60-413.000.
Fathergill, Rex D.; and Wittwer, Alvin L., to International Business Machines Corporation. Image inclination control for bi-directional ink jet printers. 4,219,823, Cl. 346-75.000.
Federal-Mogul Corporation: *See*—
Ladin, Eli M., 4,219,246, Cl. 308-219.000.
Feichtiger, Dieter: *See*—
Grabner, Christian; Krugener, Rolf; Feichtiger, Dieter; Hoffmann, Rudiger; and Kurth, Hermann W., 4,219,227, Cl. 292-216.000.
Feiner, Alexander, to Bell Telephone Laboratories, Incorporated. Tone generating hold impedance circuit for key telephone line circuits. 4,219,701, Cl. 179-99.00H.
Feng, Chung L. Curved spiral pump. 4,219,316, Cl. 418-153.000.
Feofanov, Lev P.: *See*—
Tokar, Vladimir A.; Zubik, Maria I.; Baklanov, Grigory M.; Matygin, Nikolai F.; Ustinov, Valentin S.; Kolesnikov, Anatoly V.; Gashenko, Stanislav I.; Rogatkin, Alexandr A.; Khlopkov, Leonid P.; Mikheeva, Vera I.; Lekalova, Lidia I.; Drepin, Nikolai F.; Feofanov, Lev P.; Khodotova, Nina E.; Shevchenko, Ivan I.; Telina, Larisa A.; Garmash, Vladimir I.; and Frantsevich, Andrei M., 4,219,363, Cl. 106-100.000.
Ferranti Limited: *See*—
Roulston, John F.; and Weeden, George, 4,219,780, Cl. 330-52.000.
Ferro, Armand P., to General Electric Company. SEF Lamp dimming. 4,219,760, Cl. 315-248.000.
Feucht, Rudi: *See*—
Biermann, Peter; Ewald, Otto; Feucht, Rudi; and Schmidt, Manfred, 4,219,215, Cl. 280-615.000.
Fialkov, Jury A.: *See*—
Kastron, Valeria V.; Vitolin, Rasma O.; Fialkov, Jury A.; Shelyazhenko, Svetlana V.; Dubur, Gunar Y.; Kimenis, Agris A.; and Yagupolsky, Lev M., 4,219,653, Cl. 546-322.000.
Fiber Controls Corporation: *See*—
Gordemer, David; and Seing, Sao H., 4,219,288, Cl. 406-28.000.
Fieser, Arthur H.; and Mobley, Loreley S. Conveyor for moving heavy dense objects. 4,219,113, Cl. 198-774.000.
Fila, Barbara: *See*—
Saggese, Michael F.; Owens, Fred V.; and Fila, Barbara, 4,219,640, Cl. 528-501.000.
Filipowicz, Edwin A.: *See*—
Wenkman, Gregory J.; and Filipowicz, Edwin A., 4,219,130, Cl. 221-202.000.
Finch, Jack N., to Phillips Petroleum Company. Methanation of carbon monoxide over tungsten carbide-containing alumina catalyst for methanation of carbon monoxide. 4,219,445, Cl. 252-443.000.
Fink, Joseph L. Multi-position stop-cock valve for intravenous administration of multiple medications. 4,219,021, Cl. 128-214.00B.
Finney, Orville H. Load indicator. 4,219,088, Cl. 177-138.000.
Finzel, Sigismund: *See*—
Brandenstein, Manfred; Olschewski, Armin; Finzel, Sigismund; Gossmann, Willi; and Stark, Josef, 4,219,240, Cl. 301-5.700.
Firestone Tire & Rubber Company, The: *See*—
Halasa, Adel F.; Hall, James E.; and Para, Adolph, 4,219,627, Cl. 525-89.000.
Hergenrother, William L.; and Halasa, Adel F., 4,219,637, Cl. 528-399.000.
First National Bank and Trust Co., joint executor: *See*—
Zimmerer, Arthur L., deceased; First National Bank and Trust Co., joint executor; Siekmeier, David A.; Andersen, Glen L.; and Meis, Charles H., 4,219,043, Cl. 137-312.000.
Fischer, Adolf, deceased (by Fischer, Caecilia Emma, heiress-at-law); Rohr, Wolfgang; and Paul, Gerhard, to BASF Aktiengesellschaft. Substituted O-alkylsulfonylglycolic acid anilides. 4,219,493, Cl. 260-456.00A.
Fischer, Adolf, deceased (by Fischer, Caecilia Emma, heiress-at-law); Hansen, Hanspeter; Rohr, Wolfgang; and Hamprecht, Gerhard, to BASF Aktiengesellschaft. O-Aminosulfonylglycolic anilides. 4,219,494, Cl. 260-456.00A.
Fischer, Caecilia Emma, heiress-at-law: *See*—
Fischer, Adolf, deceased; Rohr, Wolfgang; and Paul, Gerhard, 4,219,493, Cl. 260-456.00A.
Fischer, Adolf, deceased; Hansen, Hanspeter; Rohr, Wolfgang; and Hamprecht, Gerhard, 4,219,494, Cl. 260-456.00A.
Fischer, Karl. Electric plug connection. 4,219,252, Cl. 339-259.00R.
Fisher Corporation: *See*—
Bell, Robert L., 4,219,234, Cl. 297-374.000.
Fisons Limited: *See*—
Jackson, Stephen; and Roulstone, Geoffrey A., 4,219,413, Cl. 210-25.000.
Needham, Brian J.; and Miller, John, 4,219,505, Cl. 568-348.000.
Fives-Cail Babcock: *See*—
Chaix, Jean-Edmond; Fajeau, Maurice; Madamour, Paul; and Masnou, Christian, 4,219,080, Cl. 165-166.000.
Fleagle, Joseph E.: *See*—
Griner, Paul K.; and Fleagle, Joseph E., 4,219,244, Cl. 303-92.000.
Flock, John W.: *See*—
Vakil, Himanshu B.; and Flock, John W., 4,218,890, Cl. 62-114.000.
Flora, Barney S.: *See*—
Osborne, Jon L.; and Flora, Barney S., 4,219,386, Cl. 176-78.000.
Florida Atlantic University: *See*—
Hartmann, James X.; and Noga, Edward J., 4,219,543, Cl. 424-89.000.
Focke, Heinz; and Liedtke, Kurt, to Focke & Pfuhl. Arrangement of blanks for hinged lid boxes. 4,219,150, Cl. 229-44.0CB.
Focke & Pfuhl: *See*—
Focke, Heinz; and Liedtke, Kurt, 4,219,150, Cl. 229-44.0CB.
Folsom, Robert M.: *See*—
Esch, Ronald P.; Folsom, Robert M.; Liu, Cheng-Yih; Rideout, Vincent L.; Soderman, Donald A.; and Wenning, G. Thomas, 4,219,834, Cl. 357-41.000.
Forbes, George A. Insulated pipe supports. 4,219,173, Cl. 248-56.000.
Ford, Allen G.: *See*—
United States of America, National Aeronautics and Space Administration; and Ford, Allen G., 4,219,107, Cl. 188-134.000.
Forrest, William J. Animal prod system. 4,218,990, Cl. 119-96.000.
Fortunko, Christopher M.; Vasile, Carmine F.; and Thompson, Robert B., to Rockwell International Corporation. Ultrasonic ellipsometer. 4,218,924, Cl. 73-642.000.
Foster, Charles E.: *See*—
O'Neill, Cormac G.; and Foster, Charles E., 4,219,755, Cl. 310-348.000.
Foster, Perry A., Jr., to Aluminum Company of America. Electrolytic production of metal. 4,219,391, Cl. 204-67.000.
Foster Wheeler Energy Corporation: *See*—
Steiner, Peter, 4,219,537, Cl. 423-569.000.
Foundation Cryogenic Joint Venture: *See*—
Hanley, Bernard C., 4,219,224, Cl. 285-47.000.
Frangos, Thomas A. Stereo headphone adapter. 4,219,789, Cl. 333-32.000.
Frantsevich, Andrei M.: *See*—
Tokar, Vladimir A.; Zubik, Maria I.; Baklanov, Grigory M.; Matygin, Nikolai F.; Ustinov, Valentin S.; Kolesnikov, Anatoly V.; Gashenko, Stanislav I.; Rogatkin, Alexandr A.; Khlopkov, Leonid P.; Mikheeva, Vera I.; Lekalova, Lidia I.; Drepin, Nikolai F.; Feofanov, Lev P.; Khodotova, Nina E.; Shevchenko, Ivan I.; Telina, Larisa A.; Garmash, Vladimir I.; and Frantsevich, Andrei M., 4,219,363, Cl. 106-100.000.
Frantz, Charles E.; Alexander, William K.; and Lander, Walter E. B., to United States of America, Energy. Device and method for shortening reactor process tubes. 4,218,908, Cl. 72-302.000.
Fraser Sweatman, Inc.: *See*—
Czajka, Ronald J., 4,219,020, Cl. 128-207.130.
Freeman, Burton R. Vertical conveyor. 4,219,301, Cl. 414-592.000.
Freilich, Alfred: *See*—
DeCristofaro, Nicholas J.; Freilich, Alfred; and Nathasingh, Davidson M., 4,219,355, Cl. 75-123.00B.
Freissle, Manfred F. A., to Screenex Wire Weaving Manufacturers (Prop.) Limited. Quick disconnect spray nozzle. 4,219,161, Cl. 239-523.000.
French, Terry W., to Cablevision Products Corp. Connector security cover assembly. 4,219,693, Cl. 174-135.000.
Fried, Josef. Certain amides of prostacyclin and related compounds. 4,219,647, Cl. 542-421.000.
Friedman, David F.: *See*—
Buckley, Michael A.; and Friedman, David F., 4,219,283, Cl. 401-129.000.
Friedrichs, Konrad: *See*—
Stuben, Werner; Eltzschig, Rudolf; and Friedrichs, Konrad, 4,219,320, Cl. 425-345.000.
Frishberg, Mark D., to Eastman Kodak Company. Azo dyes from 2-amino-5-styryl-1,3,4-thiadiazoles. 4,219,475, Cl. 260-158.000.
Frister, Manfred, to Robert Bosch GmbH. Automotive on-board network electrical system with warning means to indicate trouble in the alternator of the system. 4,219,798, Cl. 340-52.00F.
Fritze, Ulrich; and Herschinger, Heinz, to Bayer Aktiengesellschaft. Apparatus for continuous measurement of gas traces with ion-sensitive electrodes. 4,219,398, Cl. 204-195.00M.
Froehler, John R.: *See*—
Fallon, Merton R.; and Froehler, John R., 4,219,040, Cl. 137-68.00R.
Froes, Francis H.: *See*—
Yolton, Charles F.; and Froes, Francis H., 4,219,357, Cl. 75-221.000.
Frosien, Jurgen; and Reschke, Helmut, deceased (by Reschke, Paul Reschke and Flora, administrators), to Siemens Aktiengesellschaft. Method and apparatus for automatically positioning a workpiece relative to a scanning field or mask. 4,219,719, Cl. 219-121.0EM.
Fruhbeis, Horst: *See*—
Gunther, Dieter; Erckel, Rudiger; and Fruhbeis, Horst, 4,219,651, Cl. 546-70.000.

Fugleberg, Sigmund P.: *See—*
Rastas, Jussi K.; Fuglcberg, Sigmund P.; Heimala, Seppo O.; Hultholm, Sitg-Erik; and Poijarvi, Jaakko T. I., 4,219,354, Cl. 75-101.00R.

Fuji Oil Company, Limited: *See—*
Kawasaki, Yoichi; Taniguchi, Hitoshi; Yamato, Yukiomi; and Minamiyama, Kyoko, 4,219,576, Cl. 426-262.000.
Mori, Hiroyuki; Iwanaga, Yukiya; Akamatsu, Kazuo; and Kubota, Hayato, 4,219,584, Cl. 426-607.000.

Fuji Photo Film Co., Ltd.: *See—*
Kakimi, Fujio; Hoshi, Yoshiyuki; and Saeki, Keiso, 4,219,604, Cl. 428-307.000.
Sakai, Tadao, 4,219,615, Cl. 430-140.000.
Sato, Kozo; and Kato, Hajime, 4,219,219, Cl. 282-27.500.

Fuji Photo Optical Co., Ltd.: *See—*
Oshiro, Susumu; and Yoshida, Morihiko, 4,219,014, Cl. 128-6.000.

Fuji Toyuki Co., Ltd.: *See—*
Ohsumi, Atushi; Yamagishi, Yoshinao; Daigo, Kaoru; Yamamoto, Tomio; and Yamada, Katsuya, 4,219,844, Cl. 358-106.000.

Fujie, Testuo: *See—*
Matsumoto, Sakuzo; Morimoto, Taizo; and Fujie, Testuo, 4,218,823, Cl. 33-166.000.

Fujii, Tatsuo; Tabata, Yoichi; Oku, Nobuyuki; and Shishido, Yoshiaki, to Itoki Kosakusho Co., Ltd. Automatic storage and retrieval apparatus for individual file folders. 4,219,296, Cl. 414-273.000.

Fujimoto, Yasuo; and Kishi, Yasuo, to Nippon Chemiphar Company Limited. Penicillin derivatives. 4,219,477, Cl. 260-239.100.

Fujino, Yoshikazu; and Daido, Yoshiaki, to Kawasaki Jukogyo Kabushiki Kaisha. Multistage turbocompressor with multiple shafts. 4,219,306, Cl. 415-62.000.

Fujisawa, Tamotsu; Sakai, Kunikazu; and Kurebayashi, Akira, to Sagami Chemical Research Center. Process for the preparation of thiophene derivatives and thiophene derivatives obtained therethrough. 4,219,659, Cl. 549-79.000.

Fujishiro, Yuji, to Kabushiki Kaisha Tokyo Kikai Seisakusho. Switching apparatus between printing modes in printing cylinders of rotary press. 4,218,972, Cl. 101-177.000.

Fujisoku Electric Co., Ltd.: *See—*
Suzuki, Hideo; Kasai, Touru; and Matsumoto, Ken, 4,219,714, Cl. 200-157.000.

Fujita, Masayuki; Kubo, Sueki; and Nakamura, Yasuo, to Kurosaki Refractories Co., Ltd. Apparatus for applying refractory material onto the inner surface of a furnace under monitoring by a TV camera. 4,218,989, Cl. 118-713.000.

Fujita, Norihiko: *See—*
Tamura, Takaaki; Ozawa, Tomeyoshi; Ito, Wataru; Fujita, Norihiko; and Negishi, Naoki, 4,219,424, Cl. 210-201.000.

Fujiwara, Tatsuo; Abeyama, Shozo; Ishida, Kiyohito; and Nakamura, Sadayuki, to Daido Tokushuko Kabushiki Kaisha. Machinable ferritic stainless steels. 4,219,356, Cl. 75-126.00L.

Fukuda, Kunio: *See—*
Yoshida, Kazuo; and Fukuda, Kunio, 4,219,466, Cl. 260-45.75B.

Fukumura, Kagenori: *See—*
Ushijima, Fumihiro; Fukumura, Kagenori; and Ito, Keiichi, 4,219,109, Cl. 192-87.130.

Full, Donald A.: *See—*
Rainer, Norman B.; and Full, Donald A., 4,219,031, Cl. 131-10.500.

Fuller, Niles H.; and Grover, Melvin G., to Logan Farm Equipment Co., Inc. Steerable wheeled assembly. 4,219,208, Cl. 280-95.00R.

Fulop, Ferenc: *See—*
Knoll, Josef; Meszaros, Zoltan; Hermecz, Istvan; Fulop, Ferenc; Bernath, Gabor; Virag, Sandor; Nagy, Gabor; and Szentmiklosi, Peter, 4,219,649, Cl. 544-282.000.

Funderburgh, Roger. Grease gun with pressure release assembly. 4,219,131, Cl. 222-1.000.

Furuichi, Katsushi: *See—*
Ohkubo, Masharu; Ando, Yujiro; Honma, Toshio; Murakawa, Shuji; Murakami, Katsumi; and Furuichi, Katsushi, 4,219,271, Cl. 355-14.00R.

Furukawa, Masahiro; and Ohshima, Yoshikuni, to Hitachi, Ltd. Multitubular heat exchanger used in a power plant. 4,219,077, Cl. 165-114.000.

Fuzesi, Stephen, to Olin Corporation. Stabilization of amine catalysts in a composition with halogenated polyols for use in polyurethane foam production. 4,219,624, Cl. 521-171.000.

Fuziwara, Yukio: *See—*
Nitta, Tohei; Shibuya, Yoshikazu; and Fuziwara, Yukio, 4,219,862, Cl. 361-120.000.

GABA AG: *See—*
Schmid, Hans; and Muhiemann, Hans R., 4,219,541, Cl. 424-54.000.

Gagnon, Richard T.; and Horste, Stephen C., to Visual Systems Corporation. Self regulating microfilm frame detection circuit. 4,219,737, Cl. 250-570.000.

Gailland, Gilbert, to Thomson-CSF. Method for forming connections of a semiconductor device on base. 4,219,143, Cl. 228-159.000.

Gaiser, John W.: *See—*
Bright, Stephen A.; Gaiser, William R.; and Gaiser, John W., 4,219,323, Cl. 425-572.000.

Gaiser, William R.: *See—*
Bright, Stephen A.; Gaiser, William R.; and Gaiser, John W., 4,219,323, Cl. 425-572.000.

Galindo, Eugene R. Convex insert and ostomy bag structure. 4,219,023, Cl. 128-283.000.

Gallagher, Michael A.; and Spector, George. One piece fishing rod blank featuring molded in eyelets. 4,218,841, Cl. 43-24.000.

Gancy, Alan B.; and Jenczewski, Theodore J., to Allied Chemical Corporation. Electrodialytic process. 4,219,396, Cl. 204-180.00P.

Ganellin, Charon R.: *See—*
Durant, Graham J.; Ganellin, Charon R.; and Sach, George S., 4,219,553, Cl. 424-250.000.

Garafalo, Anthony: *See—*
Talmadge, Michael J.; Salvatore, Arthur C., Jr.; and Garafalo, Anthony, 4,219,073, Cl. 165-39.000.

Gard, Eric A.; and Bryan, James S., to Pennsylvania Scale Company. Electronic counting scale. 4,219,089, Cl. 177-165.000.

Gardiner, John B.: *See—*
Girgenti, Salvatore J.; and Gardiner, John B., 4,219,432, Cl. 252-51.50A.

Garlock Inc.: *See—*
Cather, Douglas A., Jr., 4,218,813, Cl. 29-450.000.

Garmash, Vladimir I.: *See—*
Tokar, Vladimir A.; Zubik, Maria I.; Baklanov, Grigory M.; Matygin, Nikolai F.; Ustinov, Valentin S.; Kolesnikov, Anatoly V.; Gashenko, Stanislav I.; Rogatkin, Alexandr A.; Khlopkov, Leonid P.; Mikheeva, Vera I.; Lekalova, Lidia I.; Drepin, Nikolai F.; Feofanov, Lev P.; Khodotova, Nina E.; Shevchenko, Ivan I.; Telina, Larisa A.; Garmash, Vladimir I.; and Frantsevich, Andrei M., 4,219,363, Cl. 106-100.000.

Garmon, Ivan E., to Champion International Corporation. Unitary paperboard divider device for a carton. 4,219,148, Cl. 229-28.00R.

Gashenko, Stanislav I.: *See—*
Tokar, Vladimir A.; Zubik, Maria I.; Baklanov, Grigory M.; Matygin, Nikolai F.; Ustinov, Valentin S.; Kolesnikov, Anatoly V.; Gashenko, Stanislav I.; Rogatkin, Alexandr A.; Khlopkov, Leonid P.; Mikheeva, Vera I.; Lekalova, Lidia I.; Drepin, Nikolai F.; Feofanov, Lev P.; Khodotova, Nina E.; Shevchenko, Ivan I.; Telina, Larisa A.; Garmash, Vladimir I.; and Frantsevich, Andrei M., 4,219,363, Cl. 106-100.000.

Gater, Robert; and Hancock, David L. J., to Service (Engineers) Limited. Machines suitable for use in the manufacture of ceramic ware. 4,219,319, Cl. 425-229.000.

Gates Rubber Company, The: *See—*
McComber, Donald R., 4,218,932, Cl. 474-161.000.

Genberg, Allan G., to L. Knight and Company Limited. Auxiliary trailer. 4,219,210, Cl. 280-401.000.

General Corporation, The: *See—*
Sugihara, Yasumasa, 4,219,890, Cl. 375-98.000.

General Electric Company: *See—*
Allred, Roy H., Jr., 4,219,160, Cl. 239-447.000.
Crivello, James V., 4,219,654, Cl. 546-342.000.
DePuy, Robert P.; and Leitten, Arthur H., Jr., 4,219,858, Cl. 361-93.000.
DePuy, Robert P., 4,219,860, Cl. 361-94.000.
Ferro, Armand P., 4,219,760, Cl. 315-248.000.
Haraldsson, Eythor M.; and Herbst, LeRoy J., 4,219,857, Cl. 361-42.000.
Pasco, Wayne D.; Klug, Frederic J.; and Borom, Marcus P., 4,219,328, Cl. 432-253.000.
Philipp, Herbert R., 4,219,518, Cl. 264-66.000.
Vakil, Himanshu B.; and Flock, John W., 4,218,890, Cl. 62-114.000.
Webb, William M., 4,219,221, Cl. 285-3.000.
Weischedel, Richard C., 4,219,804, Cl. 340-600.000.

General Motors Corporation: *See—*
MacLeod, Brian H., 4,219,104, Cl. 187-9.00R.

General Signal Corporation: *See—*
Sluis, Mark H.; and Auer, John H., Jr., 4,219,837, Cl. 367-128.000.

Genese, Joseph N., to Abbott Laboratories. Equipment sets for the sequential administration of medical liquids at dual flow rates having parallel secondary liquid flowpaths wherein one said path is controlled by a liquid sequencing valve. 4,219,022, Cl. 128-214.00G.

Geren, Keith E.: *See—*
Routh, Claude C.; Geren, Keith E.; Huisveld, Peter, Jr.; and Papineau, Milton D., 4,219,885, Cl. 367-1.000.

Gertsch, Ulrich, to Etablissements Francois Salomon et Fils. Releasable toe holder for ski binding. 4,219,217, Cl. 280-629.000.

Getz, Edwin H. Dental implement. 4,219,331, Cl. 433-140.000.

Ghista, Dhanjoo N.: *See—*
Reul, Helmut; and Ghista, Dhanjoo N., 4,218,783, Cl. 3-1.500.

Gibbons, James F. Semiconductor solar cell. 4,219,830, Cl. 357-30.000.

Gibbons, Martin D.; and Aldrich, Richard W., to United States of America, Air Force. Sense and inject moving target indicator apparatus. 4,219,845, Cl. 358-105.000.

Gilbert, Raine M. Wideband self-calibrated fiber-optic data link with fiber-optic storage. 4,219,762, Cl. 315-364.000.

Gilmont Instruments, Inc.: *See—*
Gilmont, Roger, 4,218,927, Cl. 73-752.000.

Gilmont, Roger, to Gilmont Instruments, Inc. Pressure gauge. 4,218,927, Cl. 73-752.000.

Girgenti, Salvatore J.; and Gardiner, John B., to Exxon Research & Engineering Co. Stabilized amide-imide graft of ethylene copolymeric additives for lubricants. 4,219,432, Cl. 252-51.50A.

Girling Limited: *See—*
Farr, Glyn P. R., 4,218,882, Cl. 60-413.000.

Glenn, Eldridge M., to Upjohn Company, The. Process for treating inflammation. 4,219,569, Cl. 424-331.000.

Globe Universal Sciences, Inc.: *See—*
Joosten, Wesley L., 4,219,810, Cl. 340-853.000.

Gobaud, Michel, to Moteurs Leroy-Somer. Method for regulating the voltage of an electric generator and a system for the application of said method. 4,219,768, Cl. 322-8.000.

Goerss, William G., to NLB Corporation. High pressure water cleaning device for floors, gratings, and paint laden handling devices. 4,219,155, Cl. 239-124.000.

Goethals, Rafael A. J.: *See*—
Niks, Anton; Van Hijfte, Willy H. P.; and Goethals, Rafael A. J., 4,219,589, Cl. 427-213.000.

Goksel, Mehmet A., to Michigan Technological University, Board of Control of. Method for agglomerating carbonaceous fines. 4,219,519, Cl. 264-82.000.

Gol, George: *See*—
Hill, William F.; and Gol, George, 4,218,998, Cl. 123-335.000.

Gold, Harold. Hydraulic speed governor. 4,218,884, Cl. 60-431.000.

Goldberg, Adolphe. Pieces of furniture having swivel mounted setting units. 4,219,248, Cl. 312-324.000.

Goldberg, Leon I.; Cannon, Joseph G.; and Long, John P., to University Patents, Inc. Method of increasing renal blood flow with dopamine derivatives. 4,219,568, Cl. 424-330.000.

Goldstein, Alma W.; and Fager, Earl E. C., to Abbott Laboratories. Fortimicins AH and AI. 4,219,644, Cl. 536-17.00R.

Golston, Sam W. Pneumatic carrier. 4,219,290, Cl. 406-186.000.

Goodpasture, Inc.: *See*—
Ethington, Donald, 4,219,534, Cl. 423-235.000.

Goodson, William D.; Alden, John R.; and Hyder, David L., to Kastom Electronics, Inc. Speed measuring device. 4,219,878, Cl. 364-565.000.

Goodyear Tire & Rubber Company, The: *See*—
Vandale, Leonard A.; and Winslow, Douglas L., 4,219,375, Cl. 156-136.000.

Gordemer, David; and Seing, Sao H., to Fiber Controls Corporation. Web former having stop motion control. 4,219,288, Cl. 406-28.000.

Gorelik, Lilian. Method and apparatus for the edge trimming of shoes, haberdashery goods, etc. 4,218,796, Cl. 12-90.000.

Gossmann, Willi: *See*—
Brandenstein, Manfred; Olschewski, Armin; Finzel, Sigismund; Gossmann, Willi; and Stark, Josef, 4,219,240, Cl. 301-5.700.

Goto, Harukatsu: *See*—
Sakai, Yasuo; Nagashima, Kazuo; and Goto, Harukatsu, 4,218,850, Cl. 51-49.000.

Goto, Naohiro: *See*—
Nonaka, Yasuhiko; Goto, Naohiro; and Shidara, Keiichi, 4,219,831, Cl. 357-31.000.

Goto, Toshiyuki: *See*—
Kogure, Takuyo; Shimbo, Masatoshi; and Goto, Toshiyuki, 4,219,696, Cl. 179-1.00G.

Goto, Yoshitaka: *See*—
Ishikawa, Isao; Goto, Yoshitaka; and Itoh, Michiyasu, 4,219,730, Cl. 250-305.000.

Gotzmer, Carl, Jr., to United States of America, Navy. Ferrocenyl thioesters. 4,219,490, Cl. 260-439.0CY.

Gougeon, Thomas W.: *See*—
Drobish, James L.; and Gougeon, Thomas W., 4,219,016, Cl. 128-130.000.

Gould Inc.: *See*—
Panaro, Robert J.; and Jacobs, Philip C., Jr., 4,219,795, Cl. 337-296.000.
Ponder, Jonathan Z., 4,219,742, Cl. 307-147.000.
Wiegand, Henry, 4,219,861, Cl. 361-106.000.

Government Innovators: *See*—
Stragier, Marcel G.; Peterson, Theodore J.; Bingman, John W.; and Barker, Julius A., 4,219,298, Cl. 414-409.000.

Grabner, Christian; Krugener, Rolf; Feichtiger, Dieter; Hoffmann, Rudiger; and Kurth, Hermann W., to Daimler-Benz Aktiengesellschaft. Lockable door lock for motor vehicles. 4,219,227, Cl. 292-216.000.

Grafe, Werner: *See*—
Hoffmann, Friedrich; Grafe, Werner; Deiss, Siegfried; and Schlotterer, Willy, 4,219,292, Cl. 407-63.000.

Grassi, Arturo. Bed stand. 4,218,789, Cl. 5-201.000.

Grassmann, Hans-Christian, to Siemens Aktiengesellschaft. Device for drying the sizing of spun glass filaments or the like. 4,218,830, Cl. 34-1.000.

Gray, George M.; Kelly, Stephen M.; McDonnell, Damien G.; and Mosley, Alan, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Liquid crystal compounds and materials and devices containing them. 4,219,256, Cl. 350-346.000.

Gray, Norris C.: *See*—
United States of America, National Aeronautics and Space Administration; Gray, Norris C.; Senseny, Robert M.; and Bolton, Philip N., 4,219,084, Cl. 169-70.000.

Greber, Gerd: *See*—
Darms, Roland; Kvita, Vratislav; and Greber, Gerd, 4,219,481, Cl. 260-326.00C.

Green, John D.: *See*—
Horsewell, Henry G.; Green, John D.; Luke, John A.; and Candlish, Stanley M., 4,219,033, Cl. 131-261.00B.

Greenspan, Donald J. Method and apparatus for closing tubes. 4,219,525, Cl. 264-296.000.

Greenwell, Jack E., to Lear Avia Corporation. Starter motor-alternator apparatus. 4,219,739, Cl. 290-46.000.

Greenwood, David, to Dynacast International Limited. Die casting machine. 4,219,068, Cl. 164-316.000.

Griesinger, Robert E., to Williams & Lane, Inc. Turbine inlet temperature control apparatus and method. 4,219,738, Cl. 290-40.00R.

Griffey, Deborah L.: *See*—
DeCanto, Joseph F.; and Griffey, Deborah L., 4,219,196, Cl. 273-126.00R.

Grill, James R.: *See*—
Hoaglin, Harold B.; Grill, James R.; and Keller, Jack H., 4,219,370, Cl. 148-9.600.

Griner, Paul K.; and Fleagle, Joseph E., to Wagner Electric Corporation. Fault detector for wheel slip control system. 4,219,244, Cl. 303-92.000.

Grolig, Johann: *See*—
Becker, Robert; Grolig, Johann; Rasp, Christian; and Scharfe, Gerhard, 4,219,661, Cl. 560-24.000.

Gromer, Jurgen W. K.; and Pracht, Hans J., to Procter & Gamble Company, The. High density, high alkalinity dishwashing detergent tablet. 4,219,436, Cl. 252-135.000.

Groninger, Greg D., to Dow Chemical Company, The. Heating apparatus for vaporizing liquefied gases. 4,219,725, Cl. 219-272.000.

Grossberg, Sidney E.; and Sedmak, Joseph J., to Medical College of Wisconsin, The. Assay for proteins and polypeptides. 4,219,337, Cl. 23-230.00B.

Grossman, Jack; and Roudner, Leonard A. Female breast volume measuring device. 4,219,029, Cl. 128-774.000.

Grossmann, Max: *See*—
Dietz, Erwin; Grossmann, Max; Gutbrod, Robert; and Maikowski, Michael, 4,219,365, Cl. 106-308.00Q.

Grover, Melvin G.: *See*—
Fuller, Niles H.; and Grover, Melvin G., 4,219,208, Cl. 280-95.00R.

Growe, Glen H.; and Williams, Robert L., to Philmon & Hart Laboratories, Incorporated. Costume headdresses. 4,218,780, Cl. 2-199.000.

Grudzinskas, Charles V.; and Weiss, Martin J., to American Cyanamid Company. Novel 11-deoxy-substituted prostaglandins of the E and F series. 4,219,496, Cl. 260-464.000.

Grunenfelder, ; and Kunzig, , to Eltex-Elektronik H. Grunenfelder El. Ing. Device and method for moistening and/or discharging electrically insulating objects and materials. 4,219,864, Cl. 361-228.000.

Gruner, Heiko; Rieger, Franz; and Schussler, Rainer, to Robert Bosch GmbH. Internally, electrically heated electrochemical sensing element. 4,219,399, Cl. 204-195.00S.

Gruntman, Leonard R. Solar still. 4,219,387, Cl. 202-182.000.

Gsell, Laurenz: *See*—
Drabek, Jozef; Ackermann, Peter; Farooq, Saleem; Gsell, Laurenz; and Kristiansen, Odd, 4,219,564, Cl. 424-305.000.

GTE Automatic Electric Laboratories Incorporated: *See*—
Reynolds, Perd L., 4,219,697, Cl. 179-2.00A.

GTE Laboratories Incorporated: *See*—
Klinedinst, Keith A.; and Murphy, Francis G., 4,219,443, Cl. 252-425.300.

GTE Sylvania Incorporated: *See*—
Haraden, Thomas; and Hough, Harold L., 4,219,870, Cl. 362-226.000.

Guidez, Joel; and Pradel, Maurice, to Commissariat a l'Energie Atomique. Circulating pumps of a liquid metal, generally sodium, ensuring the cooling of the core of a fast neutron reactor. 4,219,385, Cl. 176-40.000.

Guido, Anthony A.: *See*—
Weiss, Gerald; Scharf, Gerson; Guido, Anthony A.; and Lazardwitz, Benjamin, 4,219,891, Cl. 455-1.000.

Gulf Oil Corporation: *See*—
Hill, Robert W.; Kehl, William L.; and Lynch, Thomas J., 4,219,444, Cl. 252-435.000.

Gulf Research & Development Company: *See*—
Onopchenko, Anatoli; Sabourin, Edward T.; and Selwitz, Charles M., 4,219,679, Cl. 568-705.000.

Gunnarsson, Karl E., to Gunnebo Bruks Aktiebolag. Skidding and/or tire protector. 4,219,065, Cl. 152-243.000.

Gunnebo Bruks Aktiebolag: *See*—
Gunnarsson, Karl E., 4,219,065, Cl. 152-243.000.

Gunther, Dieter; Erckel, Rudiger; and Fruhbeis, Horst, to Hoechst Aktiengesellschaft. Benzimidazo-[1,2-a]-quinolines. 4,219,651, Cl. 546-70.000.

Gurnee, Edward F.: *See*—
Rulf, Donald C.; and Gurnee, Edward F., 4,219,630, Cl. 525-243.000.

Gusev, Valery F.; Ivanov, Gennady N.; Kontarev, Vladimir Y.; Krengel, Genrikh I.; Polivoda, Evgeny O.; Skvortsov, Alexandr N.; Schetinin, Jury I.; Kremlev, Vyacheslav Y.; Shagivaleev, Mansur Z.; and Yarmukhametov, Azat U. Data processing device for variable length multibyte data fields. 4,219,874, Cl. 364-200.000.

Gutbrod, Robert: *See*—
Dietz, Erwin; Grossmann, Max; Gutbrod, Robert; and Maikowski, Michael, 4,219,365, Cl. 106-308.00Q.

Guthlein, Werner; Wielinger, Hans; Rittersdorf, Walter; and Werner, Wolfgang, to Boehringer Mannheim GmbH. Diagnostic agent and method for the detection of occult blood in feces. 4,219,336, Cl. 23-230.00B.

Gutman, Arnold D., to Stauffer Chemical Company. Phosphoroimidophenyl insecticides. 4,219,547, Cl. 424-212.000.

Gutzwiller, Howard L., to Robinson Industries, Inc. Axial flow reversible fan for a heat treating furnace. 4,219,325, Cl. 432-199.000.

H. J. Ruesch Machine Co.: *See*—
Lofstrom, Roger J., 4,219,168, Cl. 242-56.200.

Haack, Frank P. Bicycle with frame articulated to undergo angular movement while being ridden. 4,219,209, Cl. 280-278.000.

Haberkorn, Axel; Scheer, Martin; and Stoltefuss, Jurgen, to Bayer Aktiengesellschaft. 1-(4-Phenoxy-phenyl)-1,3,5-triazines, their use as growth promoters. 4,219,552, Cl. 424-249.000.

Hachino, Hiroaki: *See*—
Mochizuki, Yasuhiro; Hachino, Hiroaki; Misawa, Yutaka; and Wakui, Yoko, 4,219,373, Cl. 148-187.000.

Hacking, Joseph F. System for working leather and like flexible sheet material. 4,218,901, Cl. 69-21.000.
Hackney, John. Boat rudder accessory. 4,218,986, Cl. 114-165.000.
Haddad, James H.; Heffley, Scott A.; and Owen, Hartley, to Mobil Oil Corporation. Fluid cracking process and the method for separating a suspension discharged from a riser cracking zone. 4,219,407, Cl. 208-151.000.
Haderer, Norman G.: *See*—
Harris, Robert D.; and Haderer, Norman G., 4,218,831, Cl. 34-4.000.
Hagelberg, Gabriella, to Bengt Petersson New Products Investment AB. Serving tray. 4,219,144, Cl. 229-2.50R.
Haggerty, Dennis M., to Thermo King Corporation. Rolling piston rotary compressor. 4,219,314, Cl. 418-24.000.
Hagrman, Raymond L.; Sandridge, Jack R.; and Soete, Paul D., to McDonnell Douglas Corporation. Overspeed protection device. 4,218,879, Cl. 60-39.28R.
Halas, James C.: *See*—
Sanchez, Jose; Kamath, Vasanth R.; and Halas, James C., 4,219,676, Cl. 568-566.000.
Halasa, Adel F.; Hall, James E.; and Para, Adolph, to Firestone Tire & Rubber Company, The. Process for the preparation of block copolymers. 4,219,627, Cl. 525-89.000.
Halasa, Adel F.: *See*—
Hergenrother, William L.; and Halasa, Adel F., 4,219,637, Cl. 528-399.000.
Hale, John K.; and Ostergren, William F., to Sperry Corporation. Closing mechanism for a fine material pan on a manure spreader. 4,219,163, Cl. 239-662.000.
Hall, Floyd V., to Liggett Group Inc. Aeration groove filter. 4,219,030, Cl. 131-10.00A.
Hall, James E.: *See*—
Halasa, Adel F.; Hall, James E.; and Para, Adolph, 4,219,627, Cl. 525-89.000.
Hall, John B.: *See*—
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., 4,219,451, Cl. 252-522.00R.
Halliburton Services: *See*—
Howe, Thomas W., 4,219,081, Cl. 166-241.000.
Halmann, Martin M., to Yeda Research & Development Co. Ltd. Photosynthetic process. 4,219,392, Cl. 204-72.000.
Hammann, Ingeborg: *See*—
Maurer, Fritz; and Hammann, Ingeborg, 4,219,546, Cl. 424-200.000.
Hamprecht, Gerhard, to BASF Aktiengesellschaft. Sulfamic acid halides. 4,219,499, Cl. 260-543.00R.
Hamprecht, Gerhard: *See*—
Fischer, Adolf, deceased; Hansen, Hanspeter; Rohr, Wolfgang; and Hamprecht, Gerhard, 4,219,494, Cl. 260-456.00A.
Hancock, David L. J.: *See*—
Gater, Robert; and Hancock, David L. J., 4,219,319, Cl. 425-229.000.
Handel, Hubert: *See*—
Cramer, Heinz; Handel, Hubert; Schefold, Manfred; Schmitt, Hermann; and Schoening, Josef, 4,219,384, Cl. 176-36.00C.
Hanley, Bernard C., to Foundation Cryogenic Joint Venture. Cryogenic pipeline system. 4,219,224, Cl. 285-47.000.
Hansen, Hanspeter: *See*—
Fischer, Adolf, deceased; Hansen, Hanspeter; Rohr, Wolfgang; and Hamprecht, Gerhard, 4,219,494, Cl. 260-456.00A.
Hansen, Uwe. Method and apparatus for low-loss storage of thermal energy and for low-loss withdrawal of the stored thermal energy. 4,219,074, Cl. 165-45.000.
Harada, Toshiro: *See*—
Inada, Masami; Ito, Shoji; Kitamura, Kazauhiko; and Harada, Toshiro, 4,219,250, Cl. 339-15.000.
Haraden, Thomas; and Hough, Harold L., to GTE Sylvania Incorporated. Front loading projection unit. 4,219,870, Cl. 362-226.000.
Haraldsson, Eythor M.; and Herbst, LeRoy J., to General Electric Company. Protective method and circuits for sheathed electrical resistance heating units. 4,219,857, Cl. 361-42.000.
Hardy, Terence: *See*—
Litchfield, Leon G.; and Hardy, Terence, 4,219,247, Cl. 312-184.000.
Hargrave, Harold M.; and Anderson, Rohn J. Thermal insulation method and means. 4,219,050, Cl. 138-97.000.
Harig, Robert G., to Darling Store Fixtures. Extensible slotted upright. 4,219,175, Cl. 248-125.000.
Harris, Robert D.; and Haderer, Norman G., to Westinghouse Electric Corp. Continuous ultraviolet curing system. 4,218,831, Cl. 34-4.000.
Harris, Robert D. Carbonated cleaning solution. 4,219,333, Cl. 8-137.000.
Harrison, Earnest R.; and Johnston, Roy C., to Texas Instruments Incorporated. External air release control in seismic air gun. 4,219,097, Cl. 181-120.000.
Harsacky, Thomas P., to Leyman Manufacturing Corp. Elevator platform structure. 4,219,103, Cl. 187-8.490.
Hart, John A.; and Collyer, John C., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Chemical resistant article. 4,218,779, Cl. 2-168.000.
Hartig, Juergen: *See*—
Platz, Rolf; Weitz, Hans-Martin; and Hartig, Juergen, 4,219,666, Cl. 560-246.000.
Hartlapp, Gerhard; Kowalski, Werner; Queck, Robert; and Dahmen, Theo, to Hoechst Aktiengesellschaft. Apparatus for the production of hexagonal phosphorus pentoxide. 4,219,533, Cl. 422-200.000.
Hartmann, James X.; and Noga, Edward J., to Florida Atlantic University. Channel catfish virus disease vaccine and method of preparation thereof and method of immunization therewith. 4,219,543, Cl. 424-89.000.
Haruki, Takanobu, to Omron Tateisi Electronics Co. Card verification system using stored functions. 4,219,151, Cl. 235-379.000.
Haruna, Tohru: *See*—
Minagawa, Motonobu; Kubota, Naohiro; Haruna, Tohru; and Shibata, Toshihiro, 4,219,463, Cl. 260-45.80N.
Hasegawa, Katsuji, to Meinan Machinery Works, Inc. Method of and apparatus for tenderizing veneer. 4,219,060, Cl. 144-213.000.
Hashimoto, Shintarou; Nakagawa, Hirohide; and Nishimura, Toshio, to Sharp Kabushiki Kaisha. Combined timekeeper and calculator with low power consumption features. 4,218,876, Cl. 368-10.000.
Hassall, Anthony G., to N. Greening Limited. Screening machines. 4,219,412, Cl. 209-399.000.
Hattori, Masaharu, to Kabushiki Kaisha Komatsu Seisakusho. Control system for a differential gear lock mechanism. 4,218,938, Cl. 74-710.500.
Hauth, Hartmut, to Sandoz Ltd. Substituted-8-phenylamino ergolines. 4,219,556, Cl. 424-261.000.
Haws, Paul M. Mobile gunnite material mixer. 4,219,279, Cl. 366-35.000.
Hayashi, Henry T. Clamp-connector for joining three tubular members. 4,219,285, Cl. 403-188.000.
Hayashi, Masaaki: *See*—
Oba, Yoichi; Kano, Tsuyoshi; Hayashi, Masaaki; Takada, Hiroshi; Kanda, Katuzo; and Eguchi, Shusaku, 4,219,587, Cl. 427-64.000.
Hayashi, Toshiharu; and Kurosawa, Kenji, to Dai Nippon Toryo Co., Ltd. Anti-corrosion coating composition. 4,219,358, Cl. 106-1.170.
Hayashi, Yoshimasa: *See*—
Kuroda, Hiroshi; Nakajima, Yasuo; Hayashi, Yoshimasa; and Nagumo, Shin-ichi, 4,218,880, Cl. 60-278.000.
Hayashida, Yoshihiro, to Tokico Ltd. Hydraulic braking pressure control valve. 4,219,243, Cl. 303-6.00C.
Haynes, Eugene M., to Owens-Corning Fiberglas Corporation. Salvaging and restraining recuperator from collapse. 4,219,345, Cl. 65-27.000.
Haytayan, Harry M. Self-piercing pop rivet fasteners. 4,218,953, Cl. 85-68.000.
Hazard, Robert E., to Polytop Corporation. Dispensing closure utilizing a sealing element supported by a washer spring. 4,219,138, Cl. 222-534.000.
Hecker, Klaus J.: *See*—
Moore, Loyd C.; and Hecker, Klaus J., 4,219,817, Cl. 343-17.1PF.
Heffley, Scott A.: *See*—
Haddad, James H.; Heffley, Scott A.; and Owen, Hartley, 4,219,407, Cl. 208-151.000.
Heidborn, Ernst, to Balco Filtertechnik GmbH. Conically shaped metal screen bodies and method for manufacturing such bodies. 4,219,427, Cl. 210-497.00R.
Heil, Walter: *See*—
Hoffmann, Otto-Horst; Heil, Walter; and Stark, Friedrich, 4,219,183, Cl. 251-159.000.
Heimala, Seppo O.: *See*—
Rastas, Jussi K.; Fugleberg, Sigmund P.; Heimala, Seppo O.; Hultholm, Sitg-Erik; and Poijarvi, Jaakko T. I., 4,219,354, Cl. 75-101.00R.
Heimann GmbH: *See*—
Rech, Werner; Welsch, Wolfgang; and Zimlich, Josef, 4,219,757, Cl. 313-220.000.
Heinemann, Robert W., to United States of America, Army. Scatterable antipersonnel mine. 4,218,974, Cl. 102-8.000.
Heling, Dennis H., to UOP Inc. Insertable armrest for a vehicle seat. 4,219,235, Cl. 297-417.000.
Heller, Karl-Heinz; and Lenz, Gunther, to Bayer Aktiengesellschaft. Process for the recovery of maleic anhydride from distillation residues. 4,219,388, Cl. 203-61.000.
Helser, Jerry L.; and Rigby, William H., Jr., to Owens-Corning Fiberglas Corporation. Water alkalinity control in the manufacture of hydrous silicate products. 4,219,515, Cl. 264-37.000.
Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA): *See*—
Borggrefe, Gerhard, 4,219,672, Cl. 562-583.000.
Zeidler, Ulrich; and Scheuermann, Fanny, 4,219,665, Cl. 560-122.000.
Henry, Rodney D., to Rockwell International Corporation. Ring laser having magnetic isolation of counter-propagating light waves. 4,219,275, Cl. 356-350.000.
Herbert Zippel GmbH & Co. KG: *See*—
Zippel, Herbert, 4,218,838, Cl. 40-359.000.
Herbst, LeRoy J.: *See*—
Haraldsson, Eythor M.; and Herbst, LeRoy J., 4,219,857, Cl. 361-42.000.
Hercules Incorporated: *See*—
DeSimone, Robert S., 4,219,450, Cl. 252-522.00R.
Herculite Protective Fabrics Corporation: *See*—
Conklin, Christine, 4,219,602, Cl. 428-244.000.
Herder, Gary A., to Prab Conveyors, Inc. Bar end separator. 4,219,410, Cl. 209-143.000.
Hergenrother, William L.; and Halasa, Adel F., to Firestone Tire & Rubber Company, The. Polyphosphazene polymers containing cyclic substituents from 1,2- or 1,3-difunctional compounds. 4,219,637, Cl. 528-399.000.
Herman, Elvin E.; and Williams, Frederick C., to Hughes Aircraft Company. Synthetic array autofocus system. 4,219,811, Cl. 343-5.0CM.

Hermanson, Spencer L.: *See*—
Nilssen, Albert G.; and Hermanson, Spencer L., 4,219,699, Cl. 179-16.0AA.

Hermecz, Istvan: *See*—
Knoll, Josef; Meszaros, Zoltan; Hermecz, Istvan; Fulop, Ferenc; Bernath, Gabor; Virag, Sandor; Nagy, Gabor; and Szentmiklosi, Peter, 4,219,649, Cl. 544-282.000.

Herrera-Cabello, Tirso R. Magnetic artificial tree ornament. 4,219,594, Cl. 428-18.000.

Herring, Nancy I. Process for extracting oil from egg yolks. 4,219,585, Cl. 426-614.000.

Herrington, F. John, Jr., to Mobil Oil Corporation. Method for controlling flow of molten polymer to multiple extrusion die orifices. 4,219,516, Cl. 264-40.700.

Herschinger, Heinz: *See*—
Fritze, Ulrich; and Herschinger, Heinz, 4,219,398, Cl. 204-195.00M.

Hersman, Michael S., to United States of America, Air Force. Backlash filter apparatus. 4,219,745, Cl. 307-358.000.

Hessler, Edward J.: *See*—
Desposato, Francis E.; and Hessler, Edward J., 4,219,641, Cl. 536-9.000.

Hewlett-Packard Company: *See*—
Judell, Neil H. K., 4,219,879, Cl. 364-602.000.
Shinn, Charles E., II, 4,219,744, Cl. 307-290.000.

Heyligenstaedt & Comp. Werkzeugmaschinenfabrik GmbH: *See*—
Dormehl, Erich, 4,218,816, Cl. 29-568.000.

Heyraud, Marc. Winding arrangement for a direct current electric machine. 4,219,753, Cl. 310-198.000.

Heyraud, Marc; and Martin, Andre, to Portescap. Electric actuating device. 4,219,825, Cl. 346-101.000.

Hickory Springs Manufacturing Company: *See*—
Hooker, Richard B., 4,218,793, Cl. 5-8.000.

Hill, Alan E. Sound production using large volume plasmas. 4,219,705, Cl. 179-113.000.

Hill, Robert W.; Kehl, William L.; and Lynch, Thomas J., to Gulf Oil Corporation. Ethylene polymerization catalysts. 4,219,444, Cl. 252-435.000.

Hill, William F.; and Gol, George, to Lucas Industries Limited. Spark ignition systems for internal combustion engines. 4,218,998, Cl. 123-335.000.

Hilt, Terry E.: *See*—
Miller, Laurence L.; and Hilt, Terry E., 4,219,313, Cl. 418-2.000.

Hirata, Junichi: *See*—
Sakaguchi, Yukinobu; Sakano, Tomiaki; and Hirata, Junichi, 4,219,748, Cl. 310-71.000.

Hirschfeld, Richard L. Three phase power control unit. 4,219,759, Cl. 315-146.000.

Hisaka Works, Ltd.: *See*—
Sumitomo, Hiroyuki, 4,219,079, Cl. 165-159.000.

Hitachi, Ltd.: *See*—
Asai, Nobuteru, 4,219,824, Cl. 346-76.0PH.
Furukawa, Masahiro; and Ohshima, Yoshikuni, 4,219,077, Cl. 165-114.000.
Ishikawa, Isao; Goto, Yoshitaka; and Itoh, Michiyasu, 4,219,730, Cl. 250-305.000.
Mochizuki, Yasuhiro; Hachino, Hiroaki; Misawa, Yutaka; and Wakui, Yoko, 4,219,373, Cl. 148-187.000.
Mori, Hidetomo; and Ishizawa, Shingo, 4,219,312, Cl. 417-295.000.
Naito, Masayoshi; Nagano, Takahiro; and Ogawa, Takuzo, 4,219,832, Cl. 357-38.000.
Nonaka, Yasuhiko; Goto, Naohiro; and Shidara, Keiichi, 4,219,831, Cl. 357-31.000.
Noshimura, Yusaku; Koseki, Yasuo; Kubota, Masayoshi; Kubota, Shoji; and Takahashi, Sankichi, 4,219,441, Cl. 252-412.000.
Oba, Yoichi; Kano, Tsuyoshi; Hayashi, Masaaki; Takada, Hiroshi; Kanda, Katuzo; and Eguchi, Shusaku, 4,219,587, Cl. 427-64.000.
Ogiue, Katsumi; Nitta, Takahisa; Mitsusada, Kazumichi; Iwabuchi, Masato; and Odaka, Masanori, 4,219,369, Cl. 148-1.500.
Sawada, Hiroji; and Igawa, Tatsuo, 4,219,707, Cl. 200-19.00R.
Shinkawa, Keiro; Shoyama, Hiroji; Sodeyama, Chuichi; and Shinagawa, Mitsuhisa, 4,219,779, Cl. 455-321.000.
Takata, Akira; and Ozaki, Kazuhiko, 4,219,310, Cl. 416-146.00A.
Tsukui, Kunitsugu, 4,219,297, Cl. 414-276.000.
Uno, Motoo; and Izumi, Hisashi, deceased, 4,218,956, Cl. 91-363.00R.

Hitachi Shipbuilding & Engineering Company, Ltd.: *See*—
Kurokawa, Masahiro; Oda, Noriyuki; and Shibamoto, Nobuji, 4,219,070, Cl. 165-11.00R.

Hoaglin, Harold B.; Grill, James R.; and Keller, Jack H., to Chicago Bridge & Iron Company. Apparatus and method for cutting and beveling pipe ends. 4,219,370, Cl. 148-9.600.

Hochiki Corporation: *See*—
Kuwabara, Katsutoshi; and Horiuchi, Mitsuo, 4,219,803, Cl. 340-595.000.

Hochtemperatur-Reaktorbau GmbH: *See*—
Cramer, Heinz; Handel, Hubert; Schefold, Manfred; Schmitt, Hermann; and Schoening, Josef, 4,219,384, Cl. 176-36.00C.

Hodapp, Norbert J., to Dart Industries Inc. Method of insulating conduit. 4,218,814, Cl. 29-450.000.

Hodgson, David: *See*—
Carter, Margaret P.; and Hodgson, David, 4,219,783, Cl. 331-1.00A.

Hoechst Aktiengesellschaft: *See*—
Dietz, Erwin; Grossmann, Max; Gutbrod, Robert; and Maikowski, Michael, 4,219,365, Cl. 106-308.00Q.
Gunther, Dieter; Erckel, Rudiger; and Fruhbeis, Horst, 4,219,651, Cl. 546-70.000.
Hartlapp, Gerhard; Kowalski, Werner; Queck, Robert; and Dahmen, Theo, 4,219,533, Cl. 422-200.000.
Konig, Inge; Streitberger, Horst; Krempl, Engelbert; and Schwenk, Ulrich, 4,219,680, Cl. 568-842.000.
Roscher, Gunter; and Pressler, Wilfried, 4,219,500, Cl. 260-561.00R.
Schwenk, Ulrich; Konig, Inge; and Streitberger, Horst, 4,219,681, Cl. 568-842.000.
Zimmermann, Josef, 4,218,809, Cl. 16-178.000.

Hoeh, James A. Segmented helical rotary cutter and method of making same. 4,219,291, Cl. 407-31.000.

Hoenke, Karl A., to Chevron Research Company. Nitric acid process and disposal of waste liquids containing ammonium nitrites. 4,219,536, Cl. 423-393.000.

Hoffmann, Friedrich; Grafe, Werner; Deiss, Siegfried; and Schlotterer, Willy, to Montanwerke Walter GmbH. Rotary helical milling cutter with replaceable cutter bit elements. 4,219,292, Cl. 407-63.000.

Hoffmann-La Roche Inc.: *See*—
Berger, Leo; Plati, John T.; and Ziering, Albert, 4,219,657, Cl. 549-43.000.
Li, Choh H., 4,219,468, Cl. 260-112.50R.
Olson, Gary L.; and Saucy, Gabriel, 4,219,506, Cl. 568-496.000.
Wehrli, Pius A., 4,219,660, Cl. 560-20.000.

Hoffmann, Otto-Horst; Heil, Walter; and Stark, Friedrich, to Leybold-Heraeus GmbH. Operating mechanism for valves, gates and the like. 4,219,183, Cl. 251-159.000.

Hoffmann, Rudiger: *See*—
Grabner, Christian; Krugener, Rolf; Feichtiger, Dieter; Hoffmann, Rudiger; and Kurth, Hermann W., 4,219,227, Cl. 292-216.000.

Hokushin Electric Works, Ltd.: *See*—
Torimaru, Takashi, 4,218,915, Cl. 73-861.160.

Holster, Peter L.; and Ooms, Adam, to U.S. Philips Corporation. Device for making discs. 4,219,321, Cl. 425-384.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Maezawa, Nobuji; Takeo, Tadashi; and Ozawa, Shogo, 4,219,723, Cl. 219-125.100.

Honeywell Inc.: *See*—
DiDomizio, Robert A., Jr., 4,218,925, Cl. 73-706.000.
Templeton, Steven R., 4,219,875, Cl. 364-200.000.
Wilske, Lowell D., 4,219,881, Cl. 364-900.000.

Honeywell Information Systems Inc.: *See*—
Lemak, Nicholas S., 4,219,851, Cl. 360-40.000.

Honma, Toshio: *See*—
Ohkubo, Masharu; Ando, Yujiro; Honma, Toshio; Murakawa, Shuji; Murakami, Katsumi; and Furuichi, Katsushi, 4,219,271, Cl. 355-14.00R.

Hoogovens Ijmuiden, B.V.: *See*—
Stuart, Eric J.; and de Mon, Bob, 4,219,390, Cl. 204-54.00R.

Hooker, Richard B., to Hickory Springs Manufacturing Company. Mounting assembly for bunk bed ladder or the like. 4,218,793, Cl. 5-8.000.

Hoover Universal, Inc.: *See*—
Mizelle, Ned W., 4,218,790, Cl. 5-247.000.
Rodgers, William C., 4,219,233, Cl. 297-300.000.

Hora, Charles J.: *See*—
Babinsky, Andrew D.; Hora, Charles J.; Peters, Edward J.; and Zeman, Wayne P., 4,219,394, Cl. 204-98.000.

Horimoto, Toshio, to Ohtsuka Giken Kogyo Kabushiki Kaisha. Apparatus for testing air tightness. 4,218,914, Cl. 73-45.500.

Horiuchi, Mitsuo: *See*—
Kuwabara, Katsutoshi; and Horiuchi, Mitsuo, 4,219,803, Cl. 340-595.000.

Hornung, Friedrich; and Schadlich, Fritz, to Robert Bosch GmbH. Mechanical apparatus for activating no load current limiting circuits in electric motors. 4,219,747, Cl. 310-68.00B.

Horsewell, Henry G.; Green, John D.; Luke, John A.; and Candlish, Stanley M., to British-American Tobacco Company Limited. Tobacco-smoke filters. 4,219,033, Cl. 131-261.00B.

Horste, Stephen C.: *See*—
Gagnon, Richard T.; and Horste, Stephen C., 4,219,737, Cl. 250-570.000.

Hoshi, Hideo; and Mitsugi, Shiro, to Kabushiki Kaisha Daini Seikosha. Temperature compensation by positioning of plural piezoelectric vibrators in an electronic wristwatch. 4,219,754, Cl. 310-315.000.

Hoshi, Yoshiyuki: *See*—
Kakimi, Fujio; Hoshi, Yoshiyuki; and Saeki, Keiso, 4,219,604, Cl. 428-307.000.

Hotchkiss-Brandt Sogeme H.B.S.: *See*—
Volat, Jean P., 4,219,281, Cl. 400-126.000.

Hoting, Johann-Peter; Rahn, Armin; and Zerver, Hermann-Jochen, to C. Plath K.G. Device for measuring the tightening angle on a wrench. 4,218,828, Cl. 33-334.000.

Hough, Harold L.: *See*—
Haraden, Thomas; and Hough, Harold L., 4,219,870, Cl. 362-226.000.

Houlihan, William J., to Sandoz, Inc. Piperidine and pyrrolidine alcohols. 4,219,560, Cl. 424-267.000.

Howard, Robert C., to Mead Corporation, The. Optical encoder. 4,219,850, Cl. 358-285.000.

Howard, Thomas B.; and Stary, Christof, to American Can Company. Continuous motion wrapping machine. 4,218,863, Cl. 53-547.000.

Howe, Robert K. Aryl-3-isoxazole benzoates. 4,219,351, Cl. 71-94.000.

Howe, Thomas W., to Halliburton Services. Knockdown centralizer. 4,219,081, Cl. 166-241.000.

Hozelock Limited: *See*—
Dadson, Roland, 4,219,162, Cl. 239-583.000.
Huang, Jen-yen, to National Semiconductor Corporation. Integrated circuit resistance ladder having curvilinear connecting segments. 4,219,797, Cl. 338-333.000.
Huffman, Robert P.; and Thomas, Jesse. Belt conveyor drive system. 4,218,881, Cl. 60-325.000.
Hughes Aircraft Company: *See*—
Crail, Timothy A., 4,219,820, Cl. 343-756.000.
Herman, Elvin E.; and Williams, Frederick C., 4,219,811, Cl. 343-5.0CM.
Huisveld, Peter, Jr.: *See*—
Routh, Claude C.; Geren, Keith E.; Huisveld, Peter, Jr.; and Papineau, Milton D., 4,219,885, Cl. 367-1.000.
Hultholm, Sitg-Erik: *See*—
Rastas, Jussi K.; Fugleberg, Sigmund P.; Heimala, Seppo O.; Hultholm, Sitg-Erik; and Poijarvi, Jaakko T. I., 4,219,354, Cl. 75-101.00R.
Hunsucker, Jerry H.; and Woods, Milton E., to International Minerals & Chemical Corp. Modified urea formaldehyde resin. 4,219,631, Cl. 525-398.000.
Hunt, Norman, to Associated Engineering Limited. Actuator devices. 4,218,997, Cl. 123-352.000.
Hunziker, Werner. Apparatus for transport and simultaneous surface-treatment of discrete commodities. 4,218,854, Cl. 51-423.000.
Huperz, Adalbert: *See*—
Maasberg, Wolfgang; and Huperz, Adalbert, 4,218,961, Cl. 92-156.000.
Hurst, Eric J.; and MacAulay, Hugh G., to Bata Shoe Company, Inc. Method and apparatus for slush molding articles of footwear. 4,219,514, Cl. 264-37.000.
Hurst, Geoffrey J., to Byrne & Davidson Doors (N.S.W.) Pty. Limited. Anti-rattle curtain assembly. 4,219,067, Cl. 160-133.000.
Hurter, Rudolf, to Ciba-Geigy Corporation. 5-Aminomethyl-2-amino naphthyl-(1) azo dyes. 4,219,472, Cl. 260-145.00B.
Hussmann, Peter, to Mittex Aktiengesellschaft. Process and plant for the recovery of water from humid air. 4,219,341, Cl. 55-179.000.
Hutchens, Morris L. Extendable spout for a container. 4,219,137, Cl. 222-462.000.
Hutchisson, James T.: *See*—
Runck, Alan H.; Armstrong, Douglas; and Hutchisson, James T., 4,219,440, Cl. 252-408.000.
Huvers, Marius E., to Canadair Limited. Gyroscopic aiming method and system for suspension system therefor. 4,218,827, Cl. 33-318.000.
Hyder, David L.: *See*—
Goodson, William D.; Alden, John R.; and Hyder, David L., 4,219,878, Cl. 364-565.000.
I-OAG, Inc.: *See*—
Leroux, Frank W., 4,218,847, Cl. 47-59.000.
I-Production Establishment: *See*—
Linford, James, 4,219,703, Cl. 179-100.30R.
I-T-E Imperial Corporation: *See*—
McConnell, Lorne D., 4,219,711, Cl. 200-148.00A.
Iacoviello, John G.; and Daniels, Wiley E., to Air Products and Chemicals, Inc. Vinyl acetate copolymer emulsions for paint. 4,219,454, Cl. 260-29.60T.
Ideal Toy Corporation: *See*—
Lahr, Robert G., 4,218,846, Cl. 46-262.000.
Idelson, Elbert M.; Raphael, Thomas; and Schlein, Herbert N., to Polaroid Corporation. I.D. cards. 4,219,599, Cl. 428-195.000.
Idstein, Hermann. Fusion fixing apparatus employing heat and pressure. 4,219,327, Cl. 432-60.000.
Igawa, Tatsuo: *See*—
Sawada, Hiroji; and Igawa, Tatsuo, 4,219,707, Cl. 200-19.00R.
Igel, Richard, to Webasto-Werk W. Baier GmbH & Co. Vehicle roof with roof opening closable by a cover. 4,219,231, Cl. 296-218.000.
Igoe, Robert S., to Merck & Co., Inc. Process of increasing viscosity in agitated milk systems. 4,219,583, Cl. 426-580.000.
Ihrman, Kryn G.; and Brandt, Manuel, to Ethyl Corporation. Aromatic amine alkylation process. 4,219,502, Cl. 260-578.000.
Ikeda, Hiroshi, to Minolta Camera Kabushiki Kaisha. Optical apparatus for electrophotographic copying machine. 4,219,273, Cl. 355-60.000.
Ikegami, Toshimasa, to Kabushiki Kaisha Suwa Seikosha. Display device for timepiece. 4,218,872, Cl. 368-82.000.
Illinois Tool Works Inc.: *See*—
Ernst, Richard J.; and Williams, Elbert E., Jr., 4,218,795, Cl. 7-158.000.
Seidel, Bernd; and Dewey, George G., 4,218,794, Cl. 7-138.000.
Weaver, William N.; Olsen, Robert C.; and Klygis, Mindaugas J., 4,219,117, Cl. 206-150.000.
Imafuku, Shigehisa: *See*—
Sugahara, Yujiro; Usui, Koichi; Ogawa, Masahide; Kurosaki, Hideaki; and Imafuku, Shigehisa, 4,219,535, Cl. 423-328.000.
Imagumbai, Masana: *See*—
Nakasugi, Hajime; Imagumbai, Masana; and Tamehiro, Hiroshi, 4,219,371, Cl. 148-12.00F.
Imai, Tamotsu, to UOP Inc. Synthesis of alcohols by hydroformylation with nitrile promoter. 4,219,684, Cl. 568-909.000.
Imperial Chemical Industries Limited: *See*—
Ellis, James M. H., 4,219,434, Cl. 252-78.100.
Pope, John A.; Rennison, Stuart C.; and Stacey, Ronald J., 4,219,616, Cl. 430-152.000.
Smith, Leslie H., 4,219,561, Cl. 424-304.000.
Inada, Masami; Ito, Shoji; Kitamura, Kazauhiko; and Harada, Toshiro, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kogyo Kabushiki Kaisha. Integrated control device. 4,219,250, Cl. 339-15.000.
Inazuka, Shinichi; and Tsuchiya, Shigekatsu, to Ajinomoto Company, Incorporated. Insect repellents and a method of repelling insects. 4,219,570, Cl. 424-343.000.
Industria Macchine Impianti: *See*—
Cruccu, Antonio, 4,219,346, Cl. 65-207.000.
Industrial Research Institute: *See*—
Tamura, Takaaki; Ozawa, Tomeyoshi; Ito, Wataru; Fujita, Norihiko; and Negishi, Naoki, 4,219,424, Cl. 210-201.000.
Ingersoll-Rand Company: *See*—
Willoughby, Robert A.; Law, John P.; and Budziak, Renno W., 4,218,853, Cl. 51-269.000.
Inoue, Osamu; Abe, Masaru; Chiba, Koji; and Miyoshi, Isao, to Bridgestone Tire Company Limited. Rubber reinforcing member and a method of manufacturing the same. 4,219,601, Cl. 428-222.000.
Inoue, Yasuo: *See*—
Araki, Naomiki; and Inoue, Yasuo, 4,219,258, Cl. 351-16.000.
Institut Straumann AG: *See*—
Steinemann, Samuel, 4,219,015, Cl. 128-92.00D.
Intermountain Research and Development Corporation: *See*—
Sinsky, John J., 4,219,133, Cl. 222-39.000.
International Business Machines Corporation: *See*—
Albert, Paul A.; and Kennedy, Thomas N., 4,219,853, Cl. 360-103.000.
Church, Mark A.; and Jones, Robert E., Jr., 4,219,854, Cl. 360-123.000.
Couch, William D.; and Minor, Richard G., 4,219,152, Cl. 235-463.000.
Esch, Ronald P.; Folsom, Robert M.; Liu, Cheng-Yih; Rideout, Vincent L.; Soderman, Donald A.; and Wenning, G. Thomas, 4,219,834, Cl. 357-41.000.
Fathergill, Rex D.; and Wittwer, Alvin L., 4,219,823, Cl. 346-75.000.
Jones, Robert E., Jr., 4,219,855, Cl. 360-125.000.
International Communication Sciences: *See*—
Wilkes, Arthur L.; Wade, Fred B.; and Thompson, Robert L., 4,219,695, Cl. 179-1.00P.
International Flavors & Fragrances Inc.: *See*—
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., 4,219,451, Cl. 252-522.00R.
International Minerals & Chemical Corp.: *See*—
Hunsucker, Jerry H.; and Woods, Milton E., 4,219,631, Cl. 525-398.000.
International Tapetronics Corp.: *See*—
Jenkins, John P., 4,219,167, Cl. 242-55.19A.
Internazionale Brevetti S.r.l.: *See*—
Zaglio, Sergio; and Marchetti, Luigi, 4,218,897, Cl. 66-163.000.
Inubushi, Akiyoshi: *See*—
Manabe, Isao; and Inubushi, Akiyoshi, 4,219,433, Cl. 252-75.000.
Inui, Taiji: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Naganawa, Hiroshi; Ishizuka, Masaaki; Shibamoto, Norio; Oki, Toshikazu; and Inui, Taiji, 4,219,622, Cl. 435-78.000.
Ion, John C.; Zieber, George M., Jr.; and Loewenstern, Stanley L., to Teleflex Incorporated. Reconnect interlock. 4,218,935, Cl. 74-501.00R.
Irwin, John W. Connector for sloped roof deck. 4,218,856, Cl. 52-90.000.
Isa, Hiroshi: *See*—
Mandai, Hiroshi; Tominaga, Anri; Yoshimura, Yoshikazu; and Isa, Hiroshi, 4,219,691, Cl. 585-532.000.
Iseki, Takeo, to Tomy Kogyo Co., Inc. Animal scale toy. 4,218,835, Cl. 35-31.00R.
Ishida, Kiyohito: *See*—
Fujiwara, Tatsuo; Abeyama, Shozo; Ishida, Kiyohito; and Nakamura, Sadayuki, 4,219,356, Cl. 75-126.00L.
Ishida, Shuichi; Yoshikawa, Haruzo; and Morohoshi, Fumio, to Kabushiki Kaisha Daini Seikosha. Electronic metronome. 4,218,874, Cl. 84-484.000.
Ishii, Eiichi, to Nippon Electric Co., Ltd. Signal processing circuit for an FM signal receiver. 4,219,778, Cl. 455-205.000.
Ishii, Hiromichi: *See*—
Okada, Kazuya; Matsuzawa, Hideo; Ishii, Hiromichi; and Kobayashi, Masao, 4,219,670, Cl. 562-546.000.
Ishikawa, Isao; Goto, Yoshitaka; and Itoh, Michiyasu, to Hitachi, Ltd. Charge-particle energy analyzer. 4,219,730, Cl. 250-305.000.
Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See*—
Ueno, Masayuki; Sagae, Makoto; and Sano, Fumiaki, 4,218,918, Cl. 73-421.50R.
Ishizawa, Shingo: *See*—
Mori, Hidetomo; and Ishizawa, Shingo, 4,219,312, Cl. 417-295.000.
Ishizuka, Masaaki: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Naganawa, Hiroshi; Ishizuka, Masaaki; Shibamoto, Norio; Oki, Toshikazu; and Inui, Taiji, 4,219,622, Cl. 435-78.000.
Isomat: *See*—
de Rougemont, Christian, 4,219,284, Cl. 403-58.000.
Istituto Sieroterapico & Vaccinogeno Toscano 'SCLAVO' S.p.A.: *See*—
Pende, Berislav; and Neri, Paolo, 4,219,467, Cl. 260-112.00R.
Ito, Keiichi: *See*—
Ushijima, Fumihiro; Fukumura, Kagenori; and Ito, Keiichi, 4,219,109, Cl. 192-87.130.
Ito, Shoji: *See*—
Inada, Masami; Ito, Shoji; Kitamura, Kazauhiko; and Harada, Toshiro, 4,219,250, Cl. 339-15.000.

Ito, Tadashi: *See—*
Suzuki, Masayuki; Yamamichi, Masayoshi; Murakami, Hiroyasu; and Ito, Tadashi, 4,219,267, Cl. 354-289.000.
Ito, Wataru: *See—*
Tamura, Takaaki; Ozawa, Tomeyoshi; Ito, Wataru; Fujita, Norihiko; and Negishi, Naoki, 4,219,424, Cl. 210-201.000.
Itoh, Michiyasu: *See—*
Ishikawa, Isao; Goto, Yoshitaka; and Itoh, Michiyasu, 4,219,730, Cl. 250-305.000.
Itoh, Ryuichi: *See—*
Taniguchi, Itsuki; Itoh, Ryuichi; Iwatsuki, Toshihiro; and Ohuchi, Shigehiro, 4,219,457, Cl. 260-38.000.
Itoki Kosakusho Co., Ltd.: *See—*
Fujii, Tatsuo; Tabata, Yoichi; Oku, Nobuyuki; and Shishido, Yoshiaki, 4,219,296, Cl. 414-273.000.
Itoku, Ko. Device for use as a bed or bedstead. 4,218,791, Cl. 5-284.000.
ITT Industries, Inc.: *See—*
Boyen, Lodewijk J. T.; and D'Huys, Rene N. J., 4,218,898, Cl. 68-12.00R.
Lupertz, Hans-Henning; and Marianu, Vlad, 4,219,106, Cl. 188-73.600.
ITW de France: *See—*
Morel, Henri, 4,218,954, Cl. 85-81.000.
Ivanov, Gennady N.: *See—*
Gusev, Valery F.; Ivanov, Gennady N.; Kontarev, Vladimir Y.; Krengel, Genrikh I.; Polivoda, Evgeny O.; Skvortsov, Alexandr N.; Schetinin, Jury I.; Kremlev, Vyacheslav Y.; Shagivaleev, Mansur Z.; and Yarmukhametov, Azat U., 4,219,874, Cl. 364-200.000.
Iwabuchi, Masato: *See—*
Ogiue, Katsumi; Nitta, Takahisa; Mitsusada, Kazumichi; Iwabuchi, Masato; and Odaka, Masanori, 4,219,369, Cl. 148-1.500.
Iwanaga, Yukiya: *See—*
Mori, Hiroyuki; Iwanaga, Yukiya; Akamatsu, Kazuo; and Kubota, Hayato, 4,219,584, Cl. 426-607.000.
Iwatsuki, Toshihiro: *See—*
Taniguchi, Itsuki; Itoh, Ryuichi; Iwatsuki, Toshihiro; and Ohuchi, Shigehiro, 4,219,457, Cl. 260-38.000.
Izumi, Hisashi, deceased: *See—*
Uno, Motoo; and Izumi, Hisashi, deceased, 4,218,956, Cl. 91-363.00R.
Izumi, Reiko, Junichi Izumi, Seiji Izumi, administrators: *See—*
Uno, Motoo; and Izumi, Hisashi, deceased, 4,218,956, Cl. 91-363.00R.
J. P. Carter Co., Inc.: *See—*
Carter, James P., 4,219,266, Cl. 354-275.000.
Jackman, Kristina R., to Merck & Co., Inc. Suspension stabilization of MgO in liquid feed supplements using xanthan gum. 4,219,572, Cl. 426-69.000.
Jackson, Stephen; and Roulstone, Geoffrey A., to Fisons Limited. Method and apparatus for treating water. 4,219,413, Cl. 210-25.000.
Jacobs, Eli S.: *See—*
Russell, James T., 4,219,704, Cl. 179-100.30B.
Jacobs, Philip C., Jr.: *See—*
Panaro, Robert J.; and Jacobs, Philip C., Jr., 4,219,795, Cl. 337-296.000.
Jaeschke, Harold R.; Patmore, Thomas R.; and Webinger, George, to Champion International Corporation. Carton with adjustable air passages. 4,219,145, Cl. 229-8.000.
Jagenberg Werke Aktiengesellschaft: *See—*
Osburg, Dieter, 4,218,943, Cl. 83-304.000.
Jaggars, Jamy L., to United States of America, Air Force. Multivariable anti-G valve. 4,219,039, Cl. 137-38.000.
Jahn, Gunther: *See—*
Bruckel, Dieter; and Jahn, Gunther, 4,219,272, Cl. 355-16.000.
Janssen, Peter J. H.; Kolk, Hendrik; and Christis, Wilhelmus J., to U.S. Philips Corporation. Television receiver having a controllable sound suppression filter. 4,219,849, Cl. 358-197.000.
Janssen Pharmaceutica N.V.: *See—*
Janssens, Frans; Stokbroekx, Raymond; Torremans, Joseph; and Luyckx, Marcel, 4,219,559, Cl. 424-267.000.
Janssens, Frans; Stokbroekx, Raymond; Torremans, Joseph; and Luyckx, Marcel, to Janssen Pharmaceutica N.V. N-Heterocyclyl-4-piperidinamines. 4,219,559, Cl. 424-267.000.
Japan Synthetic Rubber Co., Ltd.: *See—*
Ogawa, Masaya, 4,219,688, Cl. 585-361.000.
Jaremus, Boubene M., to American Hospital Supply Corporation. Dental handpiece and rotor cartridge replacement assembly therefor. 4,219,330, Cl. 433-126.000.
Jarreau, Francois X.; and Koenig, Jean J., to Etablissements Nativelle S.A. Amino-3 cardenolides, process for preparation, and pharmaceutical compositions containing same. 4,219,549, Cl. 424-241.000.
Jass, Herman E.: *See—*
Soldati, Gianluigi; Stitley, James W.; Wulf, Ronald J.; and Jass, Herman E., 4,219,540, Cl. 424-65.000.
Jaworski, Eugene: *See—*
Breslow, Jeffery D.; and Jaworski, Eugene, 4,219,195, Cl. 273-110.000.
Jayne, Michael E. Impact device. 4,218,888, Cl. 60-632.000.
Jenczewski, Theodore J.: *See—*
Gancy, Alan B.; and Jenczewski, Theodore J., 4,219,396, Cl. 204-180.00P.
Jenkins, John P., to International Tapetronics Corp. Dual capstan tape transport mechanism. 4,219,167, Cl. 242-55.19A.
JGC Corporation: *See—*
Tsuchiya, Fujio; Yamamoto, Kenzo; Yamaguchi, Katsunobu; and Okagami, Akio, 4,219,669, Cl. 562-486.000.
Jidoshakiki Co., Ltd.: *See—*
Takeshima, Sadao, 4,219,863, Cl. 361-156.000.
Joelson, Karl E. Fluid flow governing valve means. 4,219,181, Cl. 251-30.000.
John, Clarence D., Jr., to Westinghouse Electric Corp. Nuclear fuel particle bulk density determination. 4,218,920, Cl. 73-422.000.
Johns-Manville Corporation: *See—*
Cunningham, Richard N.; and Smith, Douglas D., 4,218,962, Cl. 93-84.00R.
Johnson, David R., to D-H Titanium Company, The. Metal electrowinning feed cathode. 4,219,401, Cl. 204-284.000.
Johnson, Donald M., to Corning Glass Works. Electrically heated surgical cutting instrument. 4,219,025, Cl. 128-303.100.
Johnson, Gary R., to Tri State Oil Tool Industries, Inc. Enlarged bore hole drilling method. 4,219,087, Cl. 175-65.000.
Johnson, Henry C., to RCA Corporation. Scanning radar. 4,219,814, Cl. 343-9.00R.
Johnson, Jerry L.: *See—*
Oran, William A.; Berge, LeRoy H.; Reiss, Donald A.; and Johnson, Jerry L., 4,218,921, Cl. 73-505.000.
Johnson, Paul E., to Standard Oil Company (Indiana). Process for the preparation of ethylene-propylene random copolymers. 4,219,633, Cl. 526-348.000.
Johnson, Walter E.: *See—*
Sutton, Willard H.; and Johnson, Walter E., 4,219,361, Cl. 106-63.000.
Johnson, William S.; and Bunes, Leonard A., to Leland Stanford Junior University, The Board of Trustees of the. Synthesis of steroids. 4,219,489, Cl. 260-397.300.
Johnston, Jerry A. Rivet head forming tool. 4,218,911, Cl. 72-479.000.
Johnston, Roy C.: *See—*
Harrison, Earnest R.; and Johnston, Roy C., 4,219,097, Cl. 181-120.000.
Thomson, John T; and Johnston, Roy C., 4,219,098, Cl. 181-120.000.
Jones, Allen, Jr. Steering and stabilization apparatus for torpedo. 4,218,985, Cl. 114-23.000.
Jones, Robert E., Jr., to International Business Machines Corporation. Thin film magnetic head. 4,219,855, Cl. 360-125.000.
Jones, Robert E., Jr.: *See—*
Church, Mark A.; and Jones, Robert E., Jr., 4,219,854, Cl. 360-123.000.
Jonsson, Arne, to NYBY Bruk AB. Method and means for rapid replacement of damaged pipe sections. 4,218,812, Cl. 29-402.120.
Joosten, Wesley L., to Globe Universal Sciences, Inc. Frequency division multiplex digital seismic telemetry system. 4,219,810, Cl. 340-853.000.
Jouffroy, Jacques J. M. G.: *See—*
Chaumont, Gerard P. L.; Boirin, Jean-Claude A.; and Jouffroy, Jacques J. M. G., 4,218,865, Cl. 56-13.600.
Joy Manufacturing Company: *See—*
Peterson, Harley G., 4,219,343, Cl. 55-378.000.
Judell, Neil H. K., to Hewlett-Packard Company. Digital to analog conversion system. 4,219,879, Cl. 364-602.000.
Julia, Marc; and Menet, Albert, to Rhone-Poulenc S.A. Sulphones with an alcohol group and their esters. 4,219,667, Cl. 560-254.000.
Jurgensen, Peter D.: *See—*
Mandle, Gary B.; and Jurgensen, Peter D., 4,219,715, Cl. 219-10.55F.
Juse, Rudolf: *See—*
Muschelknautz, Edgar; and Juse, Rudolf, 4,219,380, Cl. 159-47.00R.
Kabushiki Kaisha Daini Seikosha: *See—*
Hoshi, Hideo; and Mitsugi, Shiro, 4,219,754, Cl. 310-315.000.
Ishida, Shuichi; Yoshikawa, Haruzo; and Morohoshi, Fumio, 4,218,874, Cl. 84-484.000.
Nishida, Isamu; Otani, Tadashi; and Yajima, Kenji, 4,219,756, Cl. 310-348.000.
Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo: *See—*
Miyake, Toshio, 4,219,571, Cl. 426-48.000.
Kabushiki Kaisha Komatsu Seisakusho: *See—*
Hattori, Masaharu, 4,218,938, Cl. 74-710.500.
Kabushiki Kaisha Seikosha: *See—*
Moritani, Nakanobu; Oda, Hajime; and Samejima, Toshihide, 4,218,871, Cl. 368-109.000.
Kabushiki Kaisha Suwa Seikosha: *See—*
Ikegami, Toshimasa, 4,218,872, Cl. 368-82.000.
Kabushiki Kaisha Tokyo Kikai Seisakusho: *See—*
Fujishiro, Yuji, 4,218,972, Cl. 101-177.000.
Kadan, Ranjit S.; Ziegler, George M., Jr.; and Spadaro, James J., to United States of America, Agriculture. Extraction of cottonseed and concentrates to improve the color of protein isolate. 4,219,469, Cl. 260-123.500.
Kaetzel, Pierre, to Samibem, S.A. Haymaking machine. 4,218,867, Cl. 56-370.000.
Kaiser, Reinhold, to Licentia Patent-Verwaltungs-G.m.b.H. Integrated circuit with metal path for reducing parasitic effects. 4,219,827, Cl. 357-68.000.
Kaiser, Robert G., to Clark & Vicario Corporation. Method and apparatus for outflowing liquids from chamber maintained under vacuum. 4,219,340, Cl. 55-41.000.
Kakimi, Fujio; Hoshi, Yoshiyuki; and Saeki, Keiso, to Fuji Photo Film Co., Ltd. Method of forming microcapsules, microcapsular disper-

sion, and pressure sensitive recording sheet. 4,219,604, Cl. 428-307.000.

Kalfoglou, George, to Texaco Inc. Lignosulfonate-formaldehyde condensation products as additives in oil recovery processes involving chemical recovery agents. 4,219,082, Cl. 166-273.000.

Kalina, Theodore: *See*—
Wolfs, Denise Y.; Clavenna, Le Roy R.; Eakman, James M.; and Kalina, Theodore, 4,219,338, Cl. 48-197.00R.

Kalmus, Henry P., to United States of America, Army. Doppler distance measuring system. 4,218,977, Cl. 102-214.000.

Kamath, Vasanth R.: *See*—
Sanchez, Jose; Kamath, Vasanth R.; and Halas, James C., 4,219,676, Cl. 568-566.000.
Venkatram, Ramdas; Kamath, Vasanth R.; and Smith, Chester J., 4,219,675, Cl. 568-563.000.

Kamath, Venkatesh: *See*—
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., 4,219,451, Cl. 252-522.00R.

Kamen, Melvin E.; Bernfeld, Morris; and Pelc, John C., to Revlon, Inc. Marking of lenses. 4,219,721, Cl. 219-121.0LM.

Kamogawa, Masatake: *See*—
Doi, Shunichi; and Kamogawa, Masatake, 4,219,498, Cl. 260-513.00N.

Kanda, Katuzo: *See*—
Oba, Yoichi; Kano, Tsuyoshi; Hayashi, Masaaki; Takada, Hiroshi; Kanda, Katuzo; and Eguchi, Shusaku, 4,219,587, Cl. 427-64.000.

Kane, John O.: *See*—
United States of America, National Aeronautics and Space Administration; Bellavia, John, Jr.; and Kane, John O., 4,219,203, Cl. 277-181.000.

Kano, Tsuyoshi: *See*—
Oba, Yoichi; Kano, Tsuyoshi; Hayashi, Masaaki; Takada, Hiroshi; Kanda, Katuzo; and Eguchi, Shusaku, 4,219,587, Cl. 427-64.000.

Kanzaki Paper Manufacturing Co., Ltd.: *See*—
Miyake, Makoto; Shiozaki, Tomoharu; Shioi, Shunsuke; Shiraishi, Tetsuo; and Matsushita, Takao, 4,219,439, Cl. 252-316.000.
Oda, Shinichi; Aoyagi, Shoji; Kuroda, Takio; and Tozaki, Eishun, 4,219,220, Cl. 282-27.500.

Kappenhagen, George A., to Westinghouse Electric Corp. Cylinder joint. 4,219,226, Cl. 285-354.000.

Karami, Hamzeh: *See*—
Patience, Donald; and Karami, Hamzeh, 4,219,024, Cl. 128-287.000.

Karkkainen, Viljo: *See*—
Surakka, Jorma; Pokkinen, Martti; Makkonen, Jorma; Valkama, Erkki; Karkkainen, Viljo; Rabina, Pekka; and Matula, Jouni, 4,219,166, Cl. 241-246.000.

Karnofsky, George B., to Dravo Corporation. Process for preparing a protein concentrate and the product obtained thereby. 4,219,470, Cl. 260-123.500.

Karp, Arthur, to Varian Associates, Inc. Traveling wave tube with non-reciprocal attenuating adjunct. 4,219,758, Cl. 315-3.600.

Kasai, Touru: *See*—
Suzuki, Hideo; Kasai, Touru; and Matsumoto, Ken, 4,219,714, Cl. 200-157.000.

Kasei Optonix, Ltd.: *See*—
Oba, Yoichi; Kano, Tsuyoshi; Hayashi, Masaaki; Takada, Hiroshi; Kanda, Katuzo; and Eguchi, Shusaku, 4,219,587, Cl. 427-64.000.

Kastom Electronics, Inc.: *See*—
Goodson, William D.; Alden, John R.; and Hyder, David L., 4,219,878, Cl. 364-565.000.

Kastron, Valeria V.; Vitolin, Rasma O.; Fialkov, Jury A.; Shelyazhenko, Svetlana V.; Dubur, Gunar Y.; Kimenis, Agris A.; and Yagupolsky, Lev M. 2,6-Dimethyl-3,5-dimethoxycarbonyl-4-(ortho difluoromethoxyphenyl)-1,4-dihydropyridine. 4,219,653, Cl. 546-322.000.

Kasuga, Yoshiaki, to Nichiro Kogyo Company, Limited. Band feeding and tightening apparatus for strapping machine. 4,218,969, Cl. 100-32.000.

Katayama, Yoshihiko: *See*—
Sakurai, Hisaya; Moriguchi, Kisoo; and Katayama, Yoshihiko, 4,219,453, Cl. 260-23.00H.

Kato, Hajime: *See*—
Sato, Kozo; and Kato, Hajime, 4,219,219, Cl. 282-27.500.

Kato, Itsuo: *See*—
Magata, Yoshihiro; Yoshida, Kobun; and Kato, Itsuo, 4,219,852, Cl. 360-90.000.

Katou, Aritsune, to Nippondenso Co., Ltd. Rotor for a magneto generator. 4,219,752, Cl. 310-156.000.

Katz, Klaus; Abt, Reinhold; Bordovsky, Jaromir; Pfundstein, Wolfgang; and Wingert, Georg, to Daimler-Benz Aktiengesellschaft. Servo-steering system for vehicles. 4,218,958, Cl. 91-434.000.

Kaufman, Harold B., Jr.; and McCarthy, John P., to DCA Food Industries, Inc. Bottom entry oven. 4,219,716, Cl. 219-10.55R.

Kawamura, Isao, to Pacific Engineering Co., Ltd. Fuse with planar fuse element. 4,219,793, Cl. 337-228.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Fujino, Yoshikazu; and Daido, Yoshiaki, 4,219,306, Cl. 415-62.000.

Kawasaki, Masahiro: *See*—
Takaoka, Yukio; and Kawasaki, Masahiro, 4,219,262, Cl. 354-38.000.

Kawasaki, Yoichi; Taniguchi, Hitoshi; Yamato, Yukiomi; and Minamiyama, Kyoko, to Fuji Oil Company, Limited. Method of manufacturing a simulated corned beef product. 4,219,576, Cl. 426-262.000.

Kay, Steeve T. S.: *See*—
van Loon, Paul G. G.; Altiery, Anthony S.; and Kay, Steeve T. S., 4,219,835, Cl. 357-55.000.

Kehl, William L.: *See*—
Hill, Robert W.; Kehl, William L.; and Lynch, Thomas J., 4,219,444, Cl. 252-435.000.

Keller, Jack H.: *See*—
Hoaglin, Harold B.; Grill, James R.; and Keller, Jack H., 4,219,370, Cl. 148-9.600.

Kelly, Ralph B. Seed planter. 4,218,981, Cl. 111-89.000.

Kelly, Stephen M.: *See*—
Gray, George M.; Kelly, Stephen M.; McDonnell, Damien G.; and Mosley, A an, 4,219,256, Cl. 350-346.000.

Kemper, Robert W.: *See*—
Caplan, Lew; and Kemper, Robert W., 4,218,900, Cl. 68-205.00R.

Kendall Company, The: *See*—
Coates, John T., 4,219,019, Cl. 128-156.000.
Layton, Terry N., 4,219,026, Cl. 128-325.000.

Kennecott Copper Corporation: *See*—
Ruhl, Robert C., 4,218,907, Cl. 72-241.000.

Kennedy, Thomas N.: *See*—
Albert, Paul A.; and Kennedy, Thomas N., 4,219,853, Cl. 360-103.000.

Kepros-Ganes Company: *See*—
Collias, George J., 4,219,578, Cl. 426-407.000.

Kesting, Robert E., to Puropore Inc. Process for spinning dense hollow fiber cellulosic membrane. 4,219,517, Cl. 264-49.000.

Kettenes, Dirk K.: *See*—
Lenselink, Willem; and Kettenes, Dirk K., 4,219,449, Cl. 252-522.00R.

Khlopkov, Leonid P.: *See*—
Tokar, Vladimir A.; Zubik, Maria I.; Baklanov, Grigory M.; Matygin, Nikolai F.; Ustinov, Valentin S.; Kolesnikov, Anatoly V.; Gashenko, Stanislav I.; Rogatkin, Alexandr A.; Khlopkov, Leonid P.; Mikheeva, Vera I.; Lekalova, Lidia I.; Drepin, Nikolai F.; Feofanov, Lev P.; Khodotova, Nina E.; Shevchenko, Ivan I.; Telina, Larisa A.; Garmash, Vladimir I.; and Frantsevich, Andrei M., 4,219,363, Cl. 106-100.000.

Khodotova, Nina E.: *See*—
Tokar, Vladimir A.; Zubik, Maria I.; Baklanov, Grigory M.; Matygin, Nikolai F.; Ustinov, Valentin S.; Kolesnikov, Anatoly V.; Gashenko, Stanislav I.; Rogatkin, Alexandr A.; Khlopkov, Leonid P.; Mikheeva, Vera I.; Lekalova, Lidia I.; Drepin, Nikolai F.; Feofanov, Lev P.; Khodotova, Nina E.; Shevchenko, Ivan I.; Telina, Larisa A.; Garmash, Vladimir I.; and Frantsevich, Andrei M., 4,219,363, Cl. 106-100.000.

Khokhlov, Lev M.: *See*—
Vladimirov, Evgeny E.; Korchagin, Vladimir G.; Sadomov, Jury B.; and Khokhlov, Lev M., 4,219,877, Cl. 364-554.000.

Kidd, Dennis E.: *See*—
Schwartz, Harold O.; and Kidd, Dennis E., 4,218,949, Cl. 84-1.030.

Kiener, Volker: *See*—
Treptow, Wolfram; Wunsch, Gerd; Kiener, Volker; Meyer, Hermann; and Csizi, Gotthard, 4,219,400, Cl. 204-266.000.

Kikuchi, Masatsugu: *See*—
Nakagawa, Seiichi; Yonezawa, Akira; and Kikuchi, Masatsugu, 4,219,732, Cl. 250-396.0ML.

Kimenis, Agris A.: *See*—
Kastron, Valeria V.; Vitolin, Rasma O.; Fialkov, Jury A.; Shelyazhenko, Svetlana V.; Dubur, Gunar Y.; Kimenis, Agris A.; and Yagupolsky, Lev M., 4,219,653, Cl. 546-322.000.

King, Jerry N., to Milliken Research Corporation. False twist machine. 4,218,870, Cl. 57-284.000.

King, Randall N.: *See*—
Breiter, Manfred W.; Chatterji, Debajyoti; King, Randall N.; and Park, Dong-Sil, 4,219,128, Cl. 220-453.000.

King, William H.: *See*—
Anderson, David W.; King, William H.; and Malley, David R., 4,219,592, Cl. 427-405.000.

Kirtland, Howard W.: *See*—
Mount, Gordon L.; and Kirtland, Howard W., 4,219,305, Cl. 415-13.000.

Kiscaden, Roy W.; and Wescott, Kermit R., to Westinghouse Electric Corp. Acceleration monitoring system for protecting gas turbine against damaging operation at resonant speeds. 4,218,878, Cl. 60-39.05R.

Kiselman, Roman. Double bolt lock. 4,218,904, Cl. 70-134.000.

Kishi, Yasuo: *See*—
Fujimoto, Yasuo; and Kishi, Yasuo, 4,219,477, Cl. 260-239.100.

Kitamura, Kazauhiko: *See*—
Inada, Masami; Ito, Shoji; Kitamura, Kazauhiko; and Harada, Toshiro, 4,219,250, Cl. 339-15.000.

Kjesbo, Craig R., to Performance Counts, Inc. Anti-tip crossing device for skis. 4,219,206, Cl. 280-817.000.

Klas, Harold W.: *See*—
Park, Robert H.; Klas, Harold W.; and Estes, Nelson N., 4,218,987, Cl. 114-245.000.

Kleeman, Wolfgang: *See*—
Biard, Daniel; Lichtfus, Gerard J.; Pracht, Hans J.; and Kleeman, Wolfgang, 4,219,435, Cl. 252-90.000.

Kleinhans, Robert J., to Bofors America, Inc. Transducer mounting. 4,219,091, Cl. 177-211.000.

Klemmensen, Per D.: *See*—
Madsen, Hans B.; Klemmensen, Per D.; and Kolind-Andersen, Hans, 4,219,558, Cl. 424-263.000.

Kline, William M., to Medical Evaluation Devices and Instruments Corp. Method of making thrombo-resistant non-thrombogenic objects formed from a uniform mixture of a particulate resin and colloidal graphite. 4,219,520, Cl. 264-129.000.

Klinedinst, Keith A.; and Murphy, Francis G., to GTE Laboratories Incorporated. Method of preparing a cathode current collector for use in an electrochemical cell. 4,219,443, Cl. 252-425.300.

Klug, Frederic J.: *See*—
Pasco, Wayne D.; Klug, Frederic J.; and Borom, Marcus P., 4,219,328, Cl. 432-253.000.

Klun, Jerome A.; Plimmer, Jack R.; Bierl-Leonhardt, Barbara A.; and Sparks, Alton N., to United States of America, Agriculture. Sex attractant for tobacco moths. 4,219,542, Cl. 424-84.000.

Klygis, Mindaugas J.: *See*—
Weaver, William N.; Olsen, Robert C.; and Klygis, Mindaugas J., 4,219,117, Cl. 206-150.000.

Knibbs, Richard H.; and Wood, Dennis, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Energy in Her Britannic Majesty's Government of the. Filter apparatus. 4,219,421, Cl. 210-98.000.

Knibbs, Robin K. Model figures. 4,218,844, Cl. 46-149.000.

Knoll, Josef; Meszaros, Zoltan; Hermecz, Istvan; Fulop, Ferenc; Bernath, Gabor; Virag, Sandor; Nagy, Gabor; and Szentmiklosi, Peter, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara RT. Pyrido[1,2-a]pyrimidine derivatives. 4,219,649, Cl. 544-282.000.

Knoos, Stellan, to AGA Aktiebolag. Modular solar energy collector systems. 4,219,011, Cl. 126-444.000.

Knothe, Erich; and Lorenz, Gerhard, to Sartorius GmbH. Apparatus for mass transfer between fluids, provided with an interposed selectively permeable diaphragm unit. 4,219,422, Cl. 210-137.000.

Kobayashi, Masao: *See*—
Okada, Kazuya; Matsuzawa, Hideo; Ishii, Hiromichi; and Kobayashi, Masao, 4,219,670, Cl. 562-546.000.

Kobayashi, Yoshiuki; and Rokutanda, Takashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Cache memory control system. 4,219,883, Cl. 365-189.000.

Kobe Steel, Ltd.: *See*—
Nakako, Yukio; and Yokota, Shizuo, 4,219,403, Cl. 208-10.000.

Kober, Rudolf; Kopp, Herbert; and Kuznia, Christian, to Siemens Aktiengesellschaft. Process for controlling operation of and data exchange between a plurality of individual computers with a control computer. 4,219,873, Cl. 364-200.000.

Koch, David A.; Moore, Michael G.; and Pawlus, Arthur L., to Chrysler Corporation. Steering column mounted control stalk with multiple actuators for rotatable and slide type switches. 4,219,706, Cl. 200-4.000.

Koch, Rudolf, to Tyton Seal, Inc. Axial mechanical seal. 4,219,202, Cl. 277-93.0SD.

Kodama, Yutaka: *See*—
Saikawa, Isamu; Takano, Shuntaro; Yoshida, Chosaku; Takashima, Okuta; Momonoi, Kaishu; Kuroda, Seietsu; Komatsu, Miwako; Yasuda, Takashi; and Kodama, Yutaka, 4,219,554, Cl. 424-250.000.

Koehring Company: *See*—
Peterman, Robert J., 4,218,837, Cl. 37-103.000.

Koenig, Jean J.: *See*—
Jarreau, Francois X.; and Koenig, Jean J., 4,219,549, Cl. 424-241.000.

Kogan, Henry, to Condor. Orthopaedic pillow. 4,218,792, Cl. 5-436.000.

Kogure, Takuyo; Shimbo, Masatoshi; and Goto, Toshiyuki, to Matsushita Electric Industrial Co., Ltd. Sound image localization control system. 4,219,696, Cl. 179-1.00G.

Kohler, Karl A., to Champion International Corporation. Six cell glassware carton. 4,219,147, Cl. 229-27.000.

Kolesnikov, Anatoly V.: *See*—
Tokar, Vladimir A.; Zubik, Maria I.; Baklanov, Grigory M.; Matygin, Nikolai F.; Ustinov, Valentin S.; Kolesnikov, Anatoly V.; Gashenko, Stanislav I.; Rogatkin, Alexandr A.; Khlopkov, Leonid P.; Mikheeva, Vera I.; Lekalova, Lidia I.; Drepin, Nikolai F.; Feofanov, Lev P.; Khodotova, Nina E.; Shevchenko, Ivan I.; Telina, Larisa A.; Garmash, Vladimir I.; and Frantsevich, Andrei M., 4,219,363, Cl. 106-100.000.

Kolind-Andersen, Hans: *See*—
Madsen, Hans B.; Klemmensen, Per D.; and Kolind-Andersen, Hans, 4,219,558, Cl. 424-263.000.

Kolk, Hendrik: *See*—
Janssen, Peter J. H.; Kolk, Hendrik; and Christis, Wilhelmus J., 4,219,849, Cl. 358-197.000.

Komatsu, Miwako: *See*—
Saikawa, Isamu; Takano, Shuntaro; Yoshida, Chosaku; Takashima, Okuta; Momonoi, Kaishu; Kuroda, Seietsu; Komatsu, Miwako; Yasuda, Takashi; and Kodama, Yutaka, 4,219,554, Cl. 424-250.000.

Komorn, Yves: *See*—
Biola, Georges; Komorn, Yves; and Schneider, Gerard, 4,219,389, Cl. 203-72.000.

Konig, Inge; Streitberger, Horst; Krempl, Engelbert; and Schwenk, Ulrich, to Hoechst Aktiengesellschaft. Process for obtaining pure 2-(perfluoroalkyl)-ethanols from their mixtures with 2-(perfluoroalkyl)-ethylenes and possibly 2-(perfluoroalkyl)-ethyl esters. 4,219,680, Cl. 568-842.000.

Konig, Inge: *See*—
Schwenk, Ulrich; Konig, Inge; and Streitberger, Horst, 4,219,681, Cl. 568-842.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Uchida, Yasuo, 4,219,268, Cl. 354-293.000.

Konoki, Keizo; and Nozawa, Shinkichi, to Toyo Engineering Corporation. Process for manufacturing methanol. 4,219,492, Cl. 260-449.500.

Kontarev, Vladimir Y.: *See*—
Gusev, Valery F.; Ivanov, Gennady N.; Kontarev, Vladimir Y.; Krengel, Genrikh I.; Polivoda, Evgeny O.; Skvortsov, Alexandr N.; Schetinin, Jury I.; Kremlev, Vyacheslav Y.; Shagivaleev, Mansur Z.; and Yarmukhametov, Azat U., 4,219,874, Cl. 364-200.000.

Kontz, Robert F.: *See*—
Chang, Long F.; and Kontz, Robert F., 4,219,322, Cl. 425-547.000.

Kopp, Herbert: *See*—
Kober, Rudolf; Kopp, Herbert; and Kuznia, Christian, 4,219,873, Cl. 364-200.000.

Kopp, Reiner H.; and Schmermund, John, to Brinkmann Instruments, Inc. Apparatus for analyzing biological specimens. 4,219,530, Cl. 422-69.000.

Korchagin, Vladimir G.: *See*—
Vladimirov, Evgeny E.; Korchagin, Vladimir G.; Sadomov, Jury B.; and Khokhlov, Lev M., 4,219,877, Cl. 364-554.000.

Koseki, Yasuo: *See*—
Noshimura, Yusaku; Koseki, Yasuo; Kubota, Masayoshi; Kubota, Shoji; and Takahashi, Sankichi, 4,219,441, Cl. 252-412.000.

Kostov, Dimitar C. Ski brake. 4,219,214, Cl. 280-605.000.

Kouth, Herbert, to Rockwell-Golde, G.m.b.H. Blocking device for hand crank drives on automobile sliding roofs. 4,219,232, Cl. 296-223.000.

Kovach, Stephen M., to Ashland Oil, Inc. Alkylation of aromatics with olefins in the presence of an alumina catalyst. 4,219,690, Cl. 585-467.000.

Kovacs, Walter B., to Mid-West Conveyor Company, Inc. Conveyor stop structure. 4,219,114, Cl. 198-780.000.

Kowalski, Werner: *See*—
Hartlapp, Gerhard; Kowalski, Werner; Queck, Robert; and Dahmen, Theo, 4,219,533, Cl. 422-200.000.

Koyo Machine Industries Company Limited: *See*—
Daido, Toshihiko; and Kunimatsu, Hiroshi, 4,218,982, Cl. 112-158.00E.

Koyo Seiko Company Limited: *See*—
Daido, Toshihiko; and Kunimatsu, Hiroshi, 4,218,982, Cl. 112-158.00E.

Kramer, Petrus A.: *See*—
Verbrugge, Pieter A.; and Kramer, Petrus A., 4,219,504, Cl. 568-365.000.

Krampe & Co.: *See*—
Weikert, Norbert B.; Tekathen, Hans; and Schulte, Heinrich, 4,219,239, Cl. 299-81.000.

Kremlev, Vyacheslav Y.: *See*—
Gusev, Valery F.; Ivanov, Gennady N.; Kontarev, Vladimir Y.; Krengel, Genrikh I.; Polivoda, Evgeny O.; Skvortsov, Alexandr N.; Schetinin, Jury I.; Kremlev, Vyacheslav Y.; Shagivaleev, Mansur Z.; and Yarmukhametov, Azat U., 4,219,874, Cl. 364-200.000.

Krempl, Engelbert: *See*—
Konig, Inge; Streitberger, Horst; Krempl, Engelbert; and Schwenk, Ulrich, 4,219,680, Cl. 568-842.000.

Krengel, Genrikh I.: *See*—
Gusev, Valery F.; Ivanov, Gennady N.; Kontarev, Vladimir Y.; Krengel, Genrikh I.; Polivoda, Evgeny O.; Skvortsov, Alexandr N.; Schetinin, Jury I.; Kremlev, Vyacheslav Y.; Shagivaleev, Mansur Z.; and Yarmukhametov, Azat U., 4,219,874, Cl. 364-200.000.

Krenitsky, Thomas A., to Burroughs Wellcome Co. Stabilized thymidine phosphorylase preparation and culture medium. 4,219,621, Cl. 435-32.000.

Kristiansen, Odd: *See*—
Drabek, Jozef; Ackermann, Peter; Farooq, Saleem; Gsell, Laurenz; and Kristiansen, Odd, 4,219,564, Cl. 424-305.000.

Krolewski, Casimir V.: *See*—
White, Howard L.; and Krolewski, Casimir V., 4,219,480, Cl. 548-260.000.

Krugener, Rolf: *See*—
Grabner, Christian; Krugener, Rolf; Feichtiger, Dieter; Hoffmann, Rudiger; and Kurth, Hermann W., 4,219,227, Cl. 292-216.000.

Kubo, Sueki: *See*—
Fujita, Masayuki; Kubo, Sueki; and Nakamura, Yasuo, 4,218,989, Cl. 118-713.000.

Kubota, Hayato: *See*—
Mori, Hiroyuki; Iwanaga, Yukiya; Akamatsu, Kazuo; and Kubota, Hayato, 4,219,584, Cl. 426-607.000.

Kubota, Masayoshi: *See*—
Noshimura, Yusaku; Koseki, Yasuo; Kubota, Masayoshi; Kubota, Shoji; and Takahashi, Sankichi, 4,219,441, Cl. 252-412.000.

Kubota, Naohiro: *See*—
Minagawa, Motonobu; Kubota, Naohiro; Haruna, Tohru; and Shibata, Toshihiro, 4,219,463, Cl. 260-45.80N.

Kubota, Shoji: *See*—
Noshimura, Yusaku; Koseki, Yasuo; Kubota, Masayoshi; Kubota, Shoji; and Takahashi, Sankichi, 4,219,441, Cl. 252-412.000.

Kuehl, Guenter H.; and Sherry, Howard S., to Mobil Oil Corporation. Catalytic cracking with zeolite-containing silica-alumina hydrogel catalyst. 4,219,406, Cl. 208-120.000.

Kuehl, Guenter H.; and Sherry, Howard S., to Mobil Oil Corporation. Zeolite-containing silica-alumina hydrogel catalyst and method of making same. 4,219,446, Cl. 252-453.000.

Kuhla, Donald E.; and Plattner, Jacob J., to Pfizer Inc. 4-Pyrone prostaglandin antagonists. 4,219,483, Cl. 260-345.70P.
Kuhnen, Gottfried, to BBC Brown, Boveri & Company Limited. Method of connecting metallic parts by means of arc fusion welding. 4,219,717, Cl. 219-61.000.
Kuhner, Ernst E. Apparatus for parking motor vehicles. 4,219,295, Cl. 414-242.000.
Kulesza, Ralph J.: *See*—
Meyer, Burton C.; and Kulesza, Ralph J., 4,219,198, Cl. 273-399.000.
Kumagai, Seiichiro; Abe, Michio; and Maeda, Naoyuki, to Tokai TRW & Co. Ltd. Method and apparatus for accumulating fuel particles in a portion of a combustion chamber. 4,219,001, Cl. 123-169.0EL.
Kunimatsu, Hiroshi: *See*—
Daido, Toshihiko; and Kunimatsu, Hiroshi, 4,218,982, Cl. 112-158.00E.
Kuntz, Emile, to Rhone-Poulenc Industries. Telomerization process. 4,219,677, Cl. 568-657.000.
Kunzig, : *See*—
Grunenfelder, ; and Kunzig, , 4,219,864, Cl. 361-228.000.
Kuo, Chun-Liang. Writing implement. 4,219,282, Cl. 401-57.000.
Kurebayashi, Akira: *See*—
Fujisawa, Tamotsu; Sakai, Kunikazu; and Kurebayashi, Akira, 4,219,659, Cl. 549-79.000.
Kuroda, Hiroshi; Nakajima, Yasuo; Hayashi, Yoshimasa; and Nagumo, Shin-ichi, to Nissan Motor Company, Limited. Spark-ignition internal combustion engine. 4,218,880, Cl. 60-278.000.
Kuroda, Seietsu: *See*—
Saikawa, Isamu; Takano, Shuntaro; Yoshida, Chosaku; Takashima, Okuta; Momonoi, Kaishu; Kuroda, Seietsu; Komatsu, Miwako; Yasuda, Takashi; and Kodama, Yutaka, 4,219,554, Cl. 424-250.000.
Kuroda, Takio: *See*—
Oda, Shinichi; Aoyagi, Shoji; Kuroda, Takio; and Tozaki, Eishun, 4,219,220, Cl. 282-27.500.
Kurokawa, Masahiro; Oda, Noriyuki; and Shibamoto, Nobuji, to Hitachi Shipbuilding & Engineering Company, Ltd. Apparatus for withdrawing gas from heat exchanger having exchanger tubes and method of withdrawing gas by the apparatus. 4,219,070, Cl. 165-11.00R.
Kurosaki, Hideaki: *See*—
Sugahara, Yujiro; Usui, Koichi; Ogawa, Masahide; Kurosaki, Hideaki; and Imafuku, Shigehisa, 4,219,535, Cl. 423-328.000.
Kurosaki Refractories Co., Ltd.: *See*—
Fujita, Masayuki; Kubo, Sueki; and Nakamura, Yasuo, 4,218,989, Cl. 118-713.000.
Kurosawa, Kenji: *See*—
Hayashi, Toshiharu; and Kurosawa, Kenji, 4,219,358, Cl. 106-1.170.
Kurth, Hermann W.: *See*—
Grabner, Christian; Krugener, Rolf; Feichtiger, Dieter; Hoffmann, Rudiger; and Kurth, Hermann W., 4,219,227, Cl. 292-216.000.
Kurumada, Tomoyuki: *See*—
Soma, Nobuo; Morimura, Syoji; Yoshioka, Takao; and Kurumada, Tomoyuki, 4,219,465, Cl. 260-45.8NT.
Kuwabara, Katsutoshi; and Horiuchi, Mitsuo, to Hochiki Corporation. Two-wire fire sensing and receiving system. 4,219,803, Cl. 340-595.000.
Kuznia, Christian: *See*—
Kober, Rudolf; Kopp, Herbert; and Kuznia, Christian, 4,219,873, Cl. 364-200.000.
Kvita, Vratislav: *See*—
Darms, Roland; Kvita, Vratislav; and Greber, Gerd, 4,219,481, Cl. 260-326.00C.
L. B. (Plastics) Limited: *See*—
Litchfield, Leon G.; and Hardy, Terence, 4,219,247, Cl. 312-184.000.
L. E. Carpenter & Company, Inc.: *See*—
Roman, Charles A., 4,219,376, Cl. 156-209.000.
L. Knight and Company Limited: *See*—
Genberg, Allan G., 4,219,210, Cl. 280-401.000.
Labaz: *See*—
Bazile, Yves; de Cointet de Fillain, Paul; and Pigerol, Charles, 4,219,482, Cl. 549-68.00A.
Lachman, Irwin M.: *See*—
Armistead, William H.; and Lachman, Irwin M., 4,219,344, Cl. 65-18.000.
Lacy, Carl B. Liquid mixing device for a shower head. 4,219,158, Cl. 239-305.000.
Ladin, Eli M., to Federal-Mogul Corporation. Staked flange clutch release bearing assembly. 4,219,246, Cl. 308-219.000.
Laforest, Jacqueline S., to SmithKline Corporation. (2,3-Dichloro-4-carboxy)phenoxy acetic acid and esters thereof. 4,219,663, Cl. 560-62.000.
Lahr, Robert G., to Ideal Toy Corporation. Lane changing toy car with unidirectional clutch and positive steering. 4,218,846, Cl. 46-262.000.
Laing, Ingeborg. Heat storage device. 4,219,075, Cl. 165-104.00S.
Lander, Walter E. B.: *See*—
Frantz, Charles E.; Alexander, William K.; and Lander, Walter E. B., 4,218,908, Cl. 72-302.000.
Lang, Armin, to Zahnradfabrik Friedrichshafen AG. Vehicle steering assist. 4,219,093, Cl. 180-131.000.
Lang, Jean-Louis, to Louis Lang S.A. Sealed, shaped watch-case. 4,218,873, Cl. 368-281.000.
Lang Jewelry Company: *See*—
Tropea, Amilcare R., 4,218,894, Cl. 63-13.000.
Langer, Manfred, to Deutsche Gold- und Silber Scheideanstalt vormals Roessler. Flame retardant agent solution of phosphoric acid containing condensate of guanidine and formaldehyde compatible with formaldehyde resin solutions. 4,219,456, Cl. 260-33.40R.
Lapine, Anatole, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Vehicle body construction. 4,219,230, Cl. 296-216.000.
Lardy, Jean-Louis; and Majos, Jacques. Multidrain metal-oxide-semiconductor field-effect. 4,219,828, Cl. 357-22.000.
Larrimore, Herbert, to United States of America, Navy. High intensity navigation light. 4,219,871, Cl. 362-264.000.
Latsch, Reinhard; and Schlembach, Hans, to Robert Bosch GmbH. Externally ignited internal combustion engine. 4,218,992, Cl. 123-263.000.
Lausen, Thorkild: *See*—
Pedersen, Jorgen W.; and Lausen, Thorkild, 4,219,577, Cl. 426-264.000.
Laviola, Joseph. Mitre box. 4,218,947, Cl. 83-762.000.
Law, John P.: *See*—
Willoughby, Robert A.; Law, John P.; and Budziak, Renno W., 4,218,853, Cl. 51-269.000.
Layton, Terry N., to Kendall Company, The. Bladder hemostatic catheter. 4,219,026, Cl. 128-325.000.
Lazardwitz, Benjamin: *See*—
Weiss, Gerald; Scharf, Gerson; Guido, Anthony A.; and Lazardwitz, Benjamin, 4,219,891, Cl. 455-1.000.
Lear Avia Corporation: *See*—
Greenwell, Jack E., 4,219,739, Cl. 290-46.000.
LeBreton, Edward T.: *See*—
Wiltshire, Arthur J.; Nara, Harry R.; LeBreton, Edward T.; and Bliley, Ward L., 4,219,125, Cl. 220-5.00A.
Leffler, Carl T., to American Cyanamid Company. Cationic fortified rosin size. 4,219,382, Cl. 162-180.000.
Legler, Steve, to Tri-Steel Fabricators Ltd. Tri-anchor bracket for poles. 4,218,858, Cl. 52-165.000.
Lehmann, Rolf; and Stotz, Wolf-Gunter, to Escher Wyss Limited. Rolling mill. 4,218,905, Cl. 72-21.000.
Leibovich, Vladimir E.: *See*—
Rhinefrank, Robert A.; and Leibovich, Vladimir E., 4,218,984, Cl. 113-1.00E.
Leitten, Arthur H., Jr.: *See*—
DePuy, Robert P.; and Leitten, Arthur H., Jr., 4,219,858, Cl. 361-93.000.
LEK, Tovarna farmacevtskik in kemicnik izdelkov, N.sol.o.: *See*—
Rucman, Rudolf; and Djordjevic, Nebojsa, 4,219,555, Cl. 424-250.000.
Lekalova, Lidia I.: *See*—
Tokar, Vladimir A.; Zubik, Maria I.; Baklanov, Grigory M.; Matygin, Nikolai F.; Ustinov, Valentin S.; Kolesnikov, Anatoly V.; Gashenko, Stanislav I.; Rogatkin, Alexandr A.; Khlopkov, Leonid P.; Mikheeva, Vera I.; Lekalova, Lidia I.; Drepin, Nikolai F.; Feofanov, Lev P.; Khodotova, Nina E.; Shevchenko, Ivan I.; Telina, Larisa A.; Garmash, Vladimir I.; and Frantsevich, Andrei M., 4,219,363, Cl. 106-100.000.
Leland Stanford Junior University, The Board of Trustees of the: *See*—
Johnson, William S.; and Bunes, Leonard A., 4,219,489, Cl. 260-397.300.
Lemak, Nicholas S., to Honeywell Information Systems Inc. Group coded recording data recovery system. 4,219,851, Cl. 360-40.000.
Lencioni, Cecil C., Jr., to Beckman Instruments, Inc. Automatic verifying electroencephalograph system. 4,219,028, Cl. 128-731.000.
Lenselink, Willem; and Kettenes, Dirk K., to Polak's Frutal Works B.V. Carane nitriles. 4,219,449, Cl. 252-522.00R.
Lenz, Gunther: *See*—
Heller, Karl-Heinz; and Lenz, Gunther, 4,219,388, Cl. 203-61.000.
Leonard, Henri, to Micro-Mega S.A. Dental hand tool holder. 4,219,618, Cl. 433-80.000.
Leroux, Frank W., to I-OAG, Inc. Hydroponic apparatus. 4,218,847, Cl. 47-59.000.
Leskovec, Edward V., to Towmotor Corporation. Cylinder arrangement for raising a carriage and uprights of a mast. 4,219,302, Cl. 414-635.000.
Leuenberger, Urs: *See*—
Schenkel, Albert; and Leuenberger, Urs, 4,219,816, Cl. 343-16.00M.
LeViness, Richard D. Reminder for vehicle drivers. 4,219,800, Cl. 340-52.00D.
Lewis, John G., to Emerson Electric Co. Spherical bearing retainer. 4,219,245, Cl. 308-29.000.
Leybold-Heraeus GmbH: *See*—
Hoffmann, Otto-Horst; Heil, Walter; and Stark, Friedrich, 4,219,183, Cl. 251-159.000.
Leyman Manufacturing Corp.: *See*—
Harsacky, Thomas P., 4,219,103, Cl. 187-8.490.
Li, Choh H., to Hoffmann-La Roche Inc. Tritiated β-endorphin. 4,219,468, Cl. 260-112.50R.
Libbey-Owens-Ford Company: *See*—
Walton, Ronald O., 4,219,326, Cl. 432-247.000.
Libbey, William J.: *See*—
Mack, Mark P.; and Libbey, William J., 4,219,639, Cl. 528-494.000.
Licentia Patent-Verwaltungs-G.m.b.H.: *See*—
Kaiser, Reinhold, 4,219,827, Cl. 357-68.000.
Licht, Anthony J. Workpiece perforating machine. 4,219,293, Cl. 408-1.00R.
Lichtfus, Gerard J.: *See*—
Biard, Daniel; Lichtfus, Gerard J.; Pracht, Hans J.; and Kleeman, Wolfgang, 4,219,435, Cl. 252-90.000.
Lieberman, Mark. Athletic apparel. 4,218,781, Cl. 2-247.000.
Liedtke, Kurt: *See*—
Focke, Heinz; and Liedtke, Kurt, 4,219,150, Cl. 229-44.0CB.

Liggett Group Inc.: *See*—
Hall, Floyd V., 4,219,030, Cl. 131-10.00A.
Liller, Delbert I. Inlet line deflector and equalizer means for a classifying cyclone used for washing and method of washing using deflectors and equalizers. 4,219,409, Cl. 209-13.000.
Lin, Frank W., to Qume Corporation. Hybrid dual mode servo-system. 4,219,766, Cl. 318-594.000.
Lin, Jeng S.; and Sleezer, Paul D., to Bristol-Myers Company. Methoxymethyl p-toluenesulfonate. 4,219,495, Cl. 260-456.00P.
Lindemann, Martin K., to Chas. S. Tanner Co. Vinyl ester copolymer aqueous emulsion wood adhesive. 4,219,455, Cl. 260-29.6WA.
Lindenthal, Hans, to Voith Transmit GmbH. Rigid, torque transmitting, flanged coupling. 4,219,286, Cl. 403-338.000.
Lindsay Manufacturing Company: *See*—
Zimmerer, Arthur L., deceased; First National Bank and Trust Co., joint executor; Siekmeier, David A.; Andersen, Glen L.; and Meis, Charles H., 4,219,043, Cl. 137-312.000.
Lindstrom, Nils E., to Vanerskog AB. Method and apparatus for sawing timber. 4,219,056, Cl. 144-3.00P.
Linford, James, to I-Production Establishment. Sound reproduction device for talking books. 4,219,703, Cl. 179-100.30R.
Lion Fat and Oil Co., Ltd., The: *See*—
Mandai, Hiroshi; Tominaga, Anri; Yoshimura, Yoshikazu; and Isa, Hiroshi, 4,219,691, Cl. 585-532.000.
Liquichimica Italiana S.p.A.: *See*—
Petrillo, Vincenzo; and Peditto, Andrea, 4,219,686, Cl. 585-24.000.
Liquid Paper Corporation: *See*—
Sharlow, Roger C., 4,218,945, Cl. 83-436.000.
Litchfield, Leon G.; and Hardy, Terence, to L. B. (Plastics) Limited. Suspended filing drawer. 4,219,247, Cl. 312-184.000.
Little, William R., to Eldec Corporation. Proximity sensing system and inductance measuring technique. 4,219,740, Cl. 307-116.000.
Littlefield, John B., to AMSTED Industries Incorporated. Composite friction element. 4,219,452, Cl. 260-3.000.
Litton Systems, Inc.: *See*—
Romine, Edward L., 4,219,251, Cl. 339-17.00C.
Liu, Cheng-Yih: *See*—
Esch, Ronald P.; Folsom, Robert M.; Liu, Cheng-Yih; Rideout, Vincent L.; Soderman, Donald A.; and Wenning, G. Thomas, 4,219,834, Cl. 357-41.000.
Livingston, Almer K. Nut cracking machine. 4,218,968, Cl. 99-572.000.
Locher, Johannes; and Domann, Helmut, to Robert Bosch GmbH. Control device for selectable speeds in internal combustion engines. 4,219,000, Cl. 123-357.000.
Loewenstern, Stanley L.: *See*—
Ion, John C.; Zieber, George M., Jr.; and Loewenstern, Stanley L., 4,218,935, Cl. 74-501.00R.
Loewenthal, Horst, to SIG Schweizerische Industrie-Gesellschaft. Conveyor system with article transfer apparatus. 4,219,112, Cl. 198-449.000.
Lofstrom, Roger J., to H. J. Ruesch Machine Co. Slitting and rewinding assembly. 4,219,168, Cl. 242-56.200.
Logan Farm Equipment Co., Inc.: *See*—
Fuller, Niles H.; and Grover, Melvin G., 4,219,208, Cl. 280-95.00R.
Loge, Olaf: *See*—
Vorbruggen, Helmut; Skuballa, Werner; Raduchel, Bernd; Losert, Wolfgang; Loge, Olaf; Muller, Bernd; and Mannesmann, Gerda, 4,219,479, Cl. 424-263.000.
Lohmann, Arthur M., to United States of America, Air Force. Double acting delay mechanism. 4,218,928, Cl. 74-3.520.
Lohse, Friedrich: *See*—
Stockinger, Friedrich; and Lohse, Friedrich, 4,219,650, Cl. 546-11.000.
Long, John P.: *See*—
Goldberg, Leon I.; Cannon, Joseph G.; and Long, John P., 4,219,568, Cl. 424-330.000.
Longsworth, Ralph C., to Air Products and Chemicals, Inc. Method for coating cryopumping apparatus. 4,219,588, Cl. 427-160.000.
Loper, Bernd: *See*—
Muller, Alf; and Loper, Bernd, 4,219,241, Cl. 301-6.0CS.
Lorenz, Gerhard: *See*—
Knothe, Erich; and Lorenz, Gerhard, 4,219,422, Cl. 210-137.000.
Losert, Wolfgang: *See*—
Vorbruggen, Helmut; Skuballa, Werner; Raduchel, Bernd; Losert, Wolfgang; Loge, Olaf; Muller, Bernd; and Mannesmann, Gerda, 4,219,479, Cl. 424-263.000.
Louis Lang S.A.: *See*—
Lang, Jean-Louis, 4,218,873, Cl. 368-281.000.
Lovy, Robert L. Supporting frame for traffic cones on vehicles. 4,219,141, Cl. 224-273.000.
Lozano, Anthony H., to Shur-Lok Corporation. Non-marring clip nut. 4,219,064, Cl. 151-41.750.
Lubitzsch, Wolfgang; Schinkmann, Manfred; and Rohling, Holmer, to Dragerwerk Aktiengesellschaft. Gas mixing device for breath-protecting, diving, medical and laboratory techniques. 4,219,038, Cl. 137-7.000.
Lucas Industries Limited: *See*—
Hill, William F.; and Gol, George, 4,218,998, Cl. 123-335.000.
Lucast, Donald H.: *See*—
Wollensak, John C.; and Lucast, Donald H., 4,219,503, Cl. 260-578.000.
Luebbers, Willi, to Nico-Pyrotechnik Hanns-Juergen Diederichs KG. Practice projectile for mortars and the like. 4,218,976, Cl. 102-49.100.
Luke, John A.: *See*—
Horsewell, Henry G.; Green, John D.; Luke, John A.; and Candlish, Stanley M., 4,219,033, Cl. 131-261.00B.
Lund, Gordon F.: *See*—
United States of America, National Aeronautics and Space Administration; and Lund, Gordon F., 4,219,027, Cl. 128-642.000.
Lupertz, Hans-Henning; and Marianu, Vlad, to ITT Industries, Inc. Brake shoe holding device for a spot-type disc brake. 4,219,106, Cl. 188-73.600.
Luscomb, Douglas A., to Bendix Corporation, The. Electronically controlled, solenoid operated fuel injection system. 4,219,154, Cl. 239-91.000.
Luyckx, Marcel: *See*—
Janssens, Frans; Stokbroekx, Raymond; Torremans, Joseph; and Luyckx, Marcel, 4,219,559, Cl. 424-267.000.
Luzzi, John J.: *See*—
Ramey, Chester E.; and Luzzi, John J., 4,219,464, Cl. 260-45.80N.
Lynch, Thomas J.: *See*—
Hill, Robert W.; Kehl, William L.; and Lynch, Thomas J., 4,219,444, Cl. 252-435.000.
Maasberg, Wolfgang; and Huperz, Adalbert, to Woma-Apparatebau Wolfgang Maasberg & Co. GmbH. Lubricating system for high-pressure pump. 4,218,961, Cl. 92-156.000.
MacAulay, Hugh G.: *See*—
Hurst, Eric J.; and MacAulay, Hugh G., 4,219,514, Cl. 264-37.000.
MacCready, Paul B., Jr., to Aerovironment Inc. Bistatic acoustic wind monitor system. 4,219,887, Cl. 367-90.000.
Macfarlane, Alistair A.; and McKemmie, Ross C., to Contrology Techniques Limited. Automatic voltage regulator. 4,219,769, Cl. 322-28.000.
Mack, Mark P.; and Libbey, William J., to Conoco, Inc. Transparent and translucent poly(butene-1). 4,219,639, Cl. 528-494.000.
Macken, John A. Corrective optics for higher order mode lasers. 4,219,254, Cl. 350-293.000.
MacLeay, Ronald E.; and Sheppard, Chester S., to Pennwalt Corporation. Tertiary aliphatic amidazo compound. 4,219,476, Cl. 260-192.000.
MacLeod, Brian H., to General Motors Corporation. Wheelchair lift device. 4,219,104, Cl. 187-9.00R.
Macpherson, Roger. Bicycle rack for autos. 4,219,142, Cl. 224-324.000.
Madamour, Paul: *See*—
Chaix, Jean-Edmond; Fajeau, Maurice; Madamour, Paul; and Masnou, Christian, 4,219,080, Cl. 165-166.000.
Madsen, Hans B.; Klemmensen, Per D.; and Kolind-Andersen, Hans, to A/S Cheminova. Organic fluoro-imides and their use as miticides, etc. 4,219,558, Cl. 424-263.000.
Maeda, Katsumi, to Star Seimitsu Kabushiki Kaisha. Wire printer. 4,219,280, Cl. 400-124.000.
Maeda, Naoyuki: *See*—
Kumagai, Seiichiro; Abe, Michio; and Maeda, Naoyuki, 4,219,001, Cl. 123-169.0EL.
Maezawa, Nobuji; Takeo, Tadashi; and Ozawa, Shogo, to Honda Giken Kogyo Kabushiki Kaisha. Automatic welding machine with three-dimensional cam driven motion. 4,219,723, Cl. 219-125.100.
Magata, Yoshihiro; Yoshida, Kobun; and Kato, Itsuo, to Pioneer Electronic Corporation. Improved cassette recorder having simplified operation. 4,219,852, Cl. 360-90.000.
Magee, James H.; and Tauber, Thomas E., to Technical Development Company. Lubricating oil debris monitoring system. 4,219,805, Cl. 340-631.000.
Magnavox Company, The: *See*—
Miller, William G., 4,219,842, Cl. 358-31.000.
Maher, Galeb H., to Sprague Electric Company. Ceramic capacitor having a dielectric of $(Pb,La)(Zr,Ti)O_3$ and $BaTiO_3$. 4,219,866, Cl. 361-321.000.
Maier, Alfred E.; and Ricci, Louis N., to Westinghouse Electric Corp. Circuit breaker with high speed trip latch. 4,219,713, Cl. 200-153.00G.
Maikowski, Michael: *See*—
Dietz, Erwin; Grossmann, Max; Gutbrod, Robert; and Maikowski, Michael, 4,219,365, Cl. 106-308.00Q.
Main, Doug, to Main, Harvey M. Socket release apparatus. 4,218,940, Cl. 81-63.000.
Main, Harvey M.: *See*—
Main, Doug, 4,218,940, Cl. 81-63.000.
Maistre, Michel, to Societe Europeene de Propulsion. Three-dimensional, multi-directional structure. 4,219,597, Cl. 428-105.000.
Majicek, Stepan, to Verbatim Corporation. Floating roller magnetic tape cartridge. 4,219,169, Cl. 242-192.000.
Majos, Jacques: *See*—
Lardy, Jean-Louis; and Majos, Jacques, 4,219,828, Cl. 357-22.000.
Makkonen, Jorma: *See*—
Surakka, Jorma; Pokkinen, Martti; Makkonen, Jorma; Valkama, Erkki; Karkkainen, Viljo; Rabina, Pekka; and Matula, Jouni, 4,219,166, Cl. 241-246.000.
Malcolm, David H., to Speeflo Manufacturing Corporation. Energy conversion unit for electrostatic spray coating apparatus and the like. 4,219,865, Cl. 361-228.000.
Malcolm, Robert B.: *See*—
Fajen, Lyle A.; Malcolm, Robert B.; and McDonald, Thomas W., 4,219,815, Cl. 343-12.0MD.
Malley, David R.: *See*—
Anderson, David W.; King, William H.; and Malley, David R., 4,219,592, Cl. 427-405.000.
Mallinckrodt, Inc.: *See*—
Bardsley, Charles E., 4,219,349, Cl. 71-62.000.
Sprinkle, Leslie M., 4,219,538, Cl. 424-1.000.
Manabe, Isao; and Inubushi, Akiyoshi, to Otsuka Chemical Co., Ltd. Metal corrosion inhibitor. 4,219,433, Cl. 252-75.000.

Mandai, Hiroshi; Tominaga, Anri; Yoshimura, Yoshikazu; and Isa, Hiroshi, to Lion Fat and Oil Co., Ltd., The. Process for producing olefin oligomer. 4,219,691, Cl. 585-532.000.
Mandle, Gary B.; and Jurgensen, Peter D. Microwave powered turntable for microwave ovens. 4,219,715, Cl. 219-10.55F.
Mannesmann, Gerda: *See—*
Vorbruggen, Helmut; Skuballa, Werner; Raduchel, Bernd; Losert, Wolfgang; Loge, Olaf; Muller, Bernd; and Mannesmann, Gerda, 4,219,479, Cl. 424-263.000.
Mansur, George F., Jr., to Rockwell International Corporation. Radar system. 4,219,818, Cl. 343-17.10R.
Marchetti, Augusto. Machine for closing the upper flaps of a parallelepiped box. 4,218,862, Cl. 53-374.000.
Marchetti, Luigi: *See—*
Zaglio, Sergio; and Marchetti, Luigi, 4,218,897, Cl. 66-163.000.
Mares, Frank; Oxenrider, Bryce C.; and Woolf, Cyril, to Allied Chemical Corporation. Fluorinated polyol esters. 4,219,625, Cl. 525-5.000.
Marianu, Vlad: *See—*
Lupertz, Hans-Henning; and Marianu, Vlad, 4,219,106, Cl. 188-73.600.
Markfelt, Reinhold S., to UOP Inc. Well casing finder instrument with movable magnet and magnetically operated switch. 4,219,773, Cl. 324-221.000.
Marks, Paul. Roller attachment for a vibrator compactor. 4,219,287, Cl. 404-117.000.
Marquip, Inc.: *See—*
Marschke, Carl R., 4,219,378, Cl. 156-502.000.
Marschke, Carl R., to Marquip, Inc. Web splicing. 4,219,378, Cl. 156-502.000.
Marsh, Anthony: *See—*
Cooper, Paul V.; and Marsh, Anthony, 4,219,882, Cl. 365-2.000.
Marshall, Winston S.: *See—*
Zimmerman, Dennis M.; and Marshall, Winston S., 4,219,652, Cl. 546-144.000.
Marsili, Leonardo; Rossetti, Vittorio; and Pasqualucci, Carmine, to ARCHIFAR Laboratori Chimico Farmacologici S.p.A. Rifamycin compounds. 4,219,478, Cl. 260-239.30P.
Martin, Andre: *See—*
Heyraud, Marc; and Martin, Andre, 4,219,825, Cl. 346-101.000.
Martin, Peter R.: *See—*
Messervey, Clifford H.; and Martin, Peter R., 4,219,532, Cl. 422-133.000.
Martini, Leonard J., to United States of America, Navy. Sea water pressure regulator valve. 4,219,045, Cl. 137-899.200.
Martins, Joseph G.: *See—*
Donermeyer, Donald D.; and Martins, Joseph G., 4,219,458, Cl. 260-40.00R.
Donermeyer, Donald D.; and Martins, Joseph G., 4,219,459, Cl. 260-40.00R.
Donermeyer, Donald D.; and Martins, Joseph G., 4,219,460, Cl. 260-40.00R.
Maruo, Masaya: *See—*
Arikawa, Hiroo; Maruo, Masaya; and Yuza, Yasutada, 4,219,794, Cl. 337-292.000.
Marvin Glass & Associates: *See—*
Breslow, Jeffery D.; and Jaworski, Eugene, 4,219,195, Cl. 273-110.000.
Meyer, Burton C.; and Kulesza, Ralph J., 4,219,198, Cl. 273-399.000.
Marz, Horst F., to Canadian Industries Limited. Apparatus for closing and sealing containers. 4,218,861, Cl. 53-138.00A.
Maschinenfabrik Andritz Aktiengesellschaft: *See—*
Tutschek, Ernst; and Staschnigg, Johann, 4,218,970, Cl. 100-153.000.
Mashio, Tasuku: *See—*
Nishiyama, Hiroshi; Ogawa, Toshio; and Mashio, Tasuku, 4,219,608, Cl. 428-411.000.
Masnou, Christian: *See—*
Chaix, Jean-Edmond; Fajeau, Maurice; Madamour, Paul; and Masnou, Christian, 4,219,080, Cl. 165-166.000.
Mason, Anthony, to Whirlpool Corporation. Automatic washer spin delay mechanism. 4,218,899, Cl. 68-12.00R.
Matisa Materiel Industriel S.A.: *See—*
Pasquini, Sandro, 4,218,978, Cl. 104-12.000.
Matsubara, Yukihiro: *See—*
Naito, Akinori; Shimizu, Masao; Mori, Masatsugu; and Matsubara, Yukihiro, 4,218,930, Cl. 74-216.000.
Matsumoto, Ken: *See—*
Suzuki, Hideo; Kasai, Touru; and Matsumoto, Ken, 4,219,714, Cl. 200-157.000.
Matsumoto, Sakuzo; Morimoto, Taizo; and Fujie, Testuo, to Olympus Optical Co., Ltd. Digital micrometer. 4,218,823, Cl. 33-166.000.
Matsushita Electric Industrial Co., Ltd.: *See—*
Kogure, Takuyo; Shimbo, Masatoshi; and Goto, Toshiyuki, 4,219,696, Cl. 179-1.00G.
Sakaguchi, Yukinobu; Sakano, Tomiaki; and Hirata, Junichi, 4,219,748, Cl. 310-71.000.
Takano, Hiroji, 4,218,817, Cl. 29-741.000.
Matsushita, Takao: *See—*
Miyake, Makoto; Shiozaki, Tomoharu; Shioi, Shunsuke; Shiraishi, Tetsuo; and Matsushita, Takao, 4,219,439, Cl. 252-316.000.
Matsuyama, Shigeru: *See—*
Sado, Ichiro; Saito, Seiji; and Matsuyama, Shigeru, 4,219,808, Cl. 340-756.000.
Matsuzawa, Hideo: *See—*
Okada, Kazuya; Matsuzawa, Hideo; Ishii, Hiromichi; and Kobayashi, Masao, 4,219,670, Cl. 562-546.000.
Matula, Jouni: *See—*
Surakka, Jorma; Pokkinen, Martti; Makkonen, Jorma; Valkama, Erkki; Karkkainen, Viljo; Rabina, Pekka; and Matula, Jouni, 4,219,166, Cl. 241-246.000.
Matygin, Nikolai F.: *See—*
Tokar, Vladimir A.; Zubik, Maria I.; Baklanov, Grigory M.; Matygin, Nikolai F.; Ustinov, Valentin S.; Kolesnikov, Anatoly V.; Gashenko, Stanislav I.; Rogatkin, Alexandr A.; Khlopkov, Leonid P.; Mikheeva, Vera I.; Lekalova, Lidia I.; Drepin, Nikolai F.; Feofanov, Lev P.; Khodotova, Nina E.; Shevchenko, Ivan I.; Telina, Larisa A.; Garmash, Vladimir I.; and Frantsevich, Andrei M., 4,219,363, Cl. 106-100.000.
Maurer, Fritz; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. Combating arthropods with O,O-dialkyl-O-[1-isopropyl-1,6-dihydro-6-oxo-pyridazin-3-yl]-phosphoric acid esters. 4,219,546, Cl. 424-200.000.
McCabe, Francis J. Press brake. 4,218,910, Cl. 72-389.000.
McCabe, Francis J.; and McCabe, John. Electro-thermal fire protection locking clip. 4,219,041, Cl. 137-79.000.
McCabe, Francis J., to Prefco Products, Inc. Rotating blade fire damper. 4,219,185, Cl. 251-308.000.
McCabe, John: *See—*
McCabe, Francis J.; and McCabe, John, 4,219,041, Cl. 137-79.000.
McCarthy, John P.: *See—*
Kaufman, Harold B., Jr.; and McCarthy, John P., 4,219,716, Cl. 219-10.55R.
McComber, Donald R., to Gates Rubber Company, The. Belt sprocket wheel. 4,218,932, Cl. 474-161.000.
McConnell, Lorne D., to I-T-E Imperial Corporation. Axial blast puffer interrupter with multiple puffer chambers. 4,219,711, Cl. 200-148.00A.
McCord Corporation: *See—*
Scrivo, Jerry V.; and Weller, Peter A., 4,219,189, Cl. 267-8.00R.
McDonald, Thomas W.: *See—*
Fajen, Lyle A.; Malcolm, Robert B.; and McDonald, Thomas W., 4,219,815, Cl. 343-12.0MD.
McDonnell, Damien G.: *See—*
Gray, George M.; Kelly, Stephen M.; McDonnell, Damien G.; and Mosley, Alan, 4,219,256, Cl. 350-346.000.
McDonnell Douglas Corporation: *See—*
Esker, Andrew T., 4,219,170, Cl. 244-3.140.
Hagrman, Raymond L.; Sandridge, Jack R.; and Soete, Paul D., 4,218,879, Cl. 60-39.28R.
McElroy, David J., to Texas Instruments Incorporated. Contact programmable double level polysilicon MOS read only memory. 4,219,836, Cl. 357-55.000.
McKemmie, Ross C.: *See—*
Macfarlane, Alistair A.; and McKemmie, Ross C., 4,219,769, Cl. 322-28.000.
McLain, Elmer L. Machine for making wooden chains. 4,218,877, Cl. 59-10.000.
McLaughlin, Richard L.: *See—*
Saunders, Francis R.; and McLaughlin, Richard L., 4,219,575, Cl. 426-242.000.
McMillan, Joseph C. Material handling apparatus. 4,219,300, Cl. 414-420.000.
McPeak, Garold L., to Burro-Badger Corporation. Safety system for use in association with material handling equipment. 4,219,121, Cl. 212-153.000.
Mead Corporation, The: *See—*
Howard, Robert C., 4,219,850, Cl. 358-285.000.
Paranjpe, Suresh C., 4,219,822, Cl. 346-75.000.
Mechalas, Emmanuel: *See—*
Carter, Clarence F.; and Mechalas, Emmanuel, 4,219,054, Cl. 141-10.000.
Medical College of Wisconsin, The: *See—*
Grossberg, Sidney E.; and Sedmak, Joseph J., 4,219,337, Cl. 23-230.00B.
Medical Evaluation Devices and Instruments Corp.: *See—*
Kline, William M., 4,219,520, Cl. 264-129.000.
Medwin, Herman, to United States of America, Navy. Surface acoustic signal defader. 4,219,888, Cl. 367-131.000.
Mehnert, Gottfried. Method of blow-molding hollow shaped articles, including intermediate tempering and final biaxial stretching stages. 4,219,526, Cl. 264-520.000.
Meier, Ernst, to Stopinc Aktiengesellschaft. Slide valve for the injection of material for use in the outlet of a metallurgical vessel. 4,219,188, Cl. 266-236.000.
Meinan Machinery Works, Inc.: *See—*
Hasegawa, Katsuji, 4,219,060, Cl. 144-213.000.
Meis, Charles H.: *See—*
Zimmerer, Arthur L., deceased; First National Bank and Trust Co., joint executor; Siekmeier, David A.; Andersen, Glen L.; and Meis, Charles H., 4,219,043, Cl. 137-312.000.
Mendenhall, Robert L. Asphalt-aggregate drum mixing apparatus. 4,219,278, Cl. 366-4.000.
Menet, Albert: *See—*
Julia, Marc; and Menet, Albert, 4,219,667, Cl. 560-254.000.
Mercer, Donald R. Heater module for an apparatus for melting and dispensing thermoplastic material. 4,219,728, Cl. 219-421.000.
Merck & Co., Inc.: *See—*
Cheng, Hsiung, 4,219,582, Cl. 426-578.000.

Christensen, Burton G.; and Cama, Lovji D., 4,219,462, Cl. 260-245.20R.
Colegrove, George T., 4,219,362, Cl. 106-92.000.
Igoe, Robert S., 4,219,583, Cl. 426-580.000.
Jackman, Kristina R., 4,219,572, Cl. 426-69.000.

Mergerian, Dickron: *See—*
Bozanic, Donald A.; Mergerian, Dickron; and Minarik, Ronald W., 4,219,775, Cl. 324-313.000.

Merlin Gerin: *See—*
Batteux, Pierre; and Morel, Robert, 4,219,790, Cl. 335-16.000.

Messerschmitt-Boelkow-Blohm Gesellschaft mit beschrankter Haftung: *See—*
Schwaerzler, Hans, 4,219,156, Cl. 239-265.350.

Messervey, Clifford H.; and Martin, Peter R., to Borden, Inc. Foaming device. 4,219,532, Cl. 422-133.000.

Meszaros, Zoltan: *See—*
Knoll, Josef; Meszaros, Zoltan; Hermecz, Istvan; Fulop, Ferenc; Bernath, Gabor; Virag, Sandor; Nagy, Gabor; and Szentmiklosi, Peter, 4,219,649, Cl. 544-282.000.

Metzeler Kautschuk Aktiengesellschaft: *See—*
Willmerding, Gunter, 4,219,317, Cl. 425-145.000.

Meyer, Burton C.; and Kulesza, Ralph J., to Marvin Glass & Associates. Amusement device. 4,219,198, Cl. 273-399.000.

Meyer, Hermann: *See—*
Treptow, Wolfram; Wunsch, Gerd; Kiener, Volker; Meyer, Hermann; and Csizi, Gotthard, 4,219,400, Cl. 204-266.000.

Meyer, Robert J.: *See—*
Tersteeg, Glenn E.; Nosco, Louis C.; Meyer, Robert J.; and Whitcomb, Rodney J., 4,219,529, Cl. 422-65.000.

Meyer, Thomas N.; and Wolf, Charles B., to Westinghouse Electric Corp. Arc heater construction with total alternating current usage. 4,219,726, Cl. 219-383.000.

Michigan Technological University, Board of Control of: *See—*
Goksel, Mehmet A., 4,219,519, Cl. 264-82.000.

Micro-Mega S.A.: *See—*
Leonard, Henri, 4,219,618, Cl. 433-80.000.

Microfuels, Inc.: *See—*
Taylor, David W., 4,219,164, Cl. 241-5.000.

Mid-West Conveyor Company, Inc.: *See—*
Kovacs, Walter B., 4,219,114, Cl. 198-780.000.
Moore, Archie S., 4,219,115, Cl. 198-781.000.

Miesel, John L., to Eli Lilly and Company. 1-(2,6-Dihalobenzoyl)-3-(5-substituted-2-pyridinyl)urea compounds and insecticidal use. 4,219,557, Cl. 424-263.000.

Migitaka, Masatoshi; and Mizukami, Koichiro, to VLSI Technology Research Association. Method for detecting object picture by electron beam. 4,219,731, Cl. 250-310.000.

Mikheeva, Vera I.: *See—*
Tokar, Vladimir A.; Zubik, Maria I.; Baklanov, Grigory M.; Matygin, Nikolai F.; Ustinov, Valentin S.; Kolesnikov, Anatoly V.; Gashenko, Stanislav I.; Rogatkin, Alexandr A.; Khlopkov, Leonid P.; Mikheeva, Vera I.; Lekalova, Lidia I.; Drepin, Nikolai F.; Feofanov, Lev P.; Khodotova, Nina E.; Shevchenko, Ivan I.; Telina, Larisa A.; Garmash, Vladimir I.; and Frantsevich, Andrei M., 4,219,363, Cl. 106-100.000.

Miki, Hisaya; and Yasuhara, Mitsuki, to Mitsui Petrochemical Industries Ltd. Process for purifying aldehyde-containing ketones. 4,219,507, Cl. 568-411.000.

Milberger, Ernest C.; Dolhyj, Serge R.; and Bremer, Noel J., to Standard Oil Company (Ohio). Production of maleic anhydride from four-carbon hydrocarbons using catalysts prepared by water reflux techniques. 4,219,484, Cl. 260-346.750.

Miles, James A., to Monsanto Company. Benzoxaphospholes. 4,219,510, Cl. 260-936.000.

Miller, Coston B. Method and means of construction of concrete culverts. 4,219,513, Cl. 264-32.000.

Miller, Everett R., deceased (by Miller, Vesta V., administrator), to Owens-Corning Fiberglas Corporation. Method and apparatus for producing sheet molding compound. 4,219,524, Cl. 264-216.000.

Miller, John: *See—*
Needham, Brian J.; and Miller, John, 4,219,505, Cl. 568-348.000.

Miller, Laurence L.; and Hilt, Terry E., to TRW Inc. Commutator valve construction. 4,219,313, Cl. 418-2.000.

Miller, Vesta V., administrator: *See—*
Miller, Everett R., deceased, 4,219,524, Cl. 264-216.000.

Miller, William G., to Magnavox Company, The. Video signal combiner having a common phase response and independent amplitude response. 4,219,842, Cl. 358-31.000.

Milliken Research Corporation: *See—*
Engels, Walter, 4,218,810, Cl. 26-16.000.
King, Jerry N., 4,218,870, Cl. 57-284.000.
Pittman, Edgar H., 4,218,868, Cl. 57-209.000.

Millns, John K.; and Weeks, Clive, to U.S. Philips Corporation. Buffer circuit. 4,219,743, Cl. 307-270.000.

Minagawa, Motonobu; Kubota, Naohiro; Haruna, Tohru; and Shibata, Toshihiro, to Argus Chemical Corporation. Stabilizers for synthetic polymers comprising 2,2,6,6-tetramethyl-4-piperidyl carboxylic acid ester, β-thioalkyl propionic acid ester and phenol. 4,219,463, Cl. 260-45.80N.

Minamiyama, Kyoko: *See—*
Kawasaki, Yoichi; Taniguchi, Hitoshi; Yamato, Yukiomi; and Minamiyama, Kyoko, 4,219,576, Cl. 426-262.000.

Minarik, Ronald W.: *See—*
Bozanic, Donald A.; Mergerian, Dickron; and Minarik, Ronald W., 4,219,775, Cl. 324-313.000.

Minnesota Mining and Manufacturing Company: *See—*
Albrecht, Donald E., 4,219,377, Cl. 156-330.000.

Minolta Camera Kabushiki Kaisha: *See—*
Ikeda, Hiroshi, 4,219,273, Cl. 355-60.000.

Minor, Richard G.: *See—*
Couch, William D.; and Minor, Richard G., 4,219,152, Cl. 235-463.000.

Misawa, Yutaka: *See—*
Mochizuki, Yasuhiro; Hachino, Hiroaki; Misawa, Yutaka; and Wakui, Yoko, 4,219,373, Cl. 148-187.000.

Mitel Corporation: *See—*
Panizzon, Guido; Cepelinski, Jacob; Cowpland, Michael C. J.; and Wilker, Paul S., 4,219,700, Cl. 179-17.00B.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Nitta, Tohei; Shibuya, Yoshikazu; and Fuziwara, Yukio, 4,219,862, Cl. 361-120.000.
Sato, Kunihiko; Urata, Tetsuro; Asamoto, Tetsuhiro; Asakawa, Kobun; Uebayashi, Takeo; and Taguchi, Haruo, 4,219,718, Cl. 219-69.00M.

Mitsubishi Rayon Co., Ltd.: *See—*
Doi, Shunichi; and Kamogawa, Masatake, 4,219,498, Cl. 260-513.00N.
Okada, Kazuya; Matsuzawa, Hideo; Ishii, Hiromichi; and Kobayashi, Masao, 4,219,670, Cl. 562-546.000.

Mitsugi, Shiro: *See—*
Hoshi, Hideo; and Mitsugi, Shiro, 4,219,754, Cl. 310-315.000.

Mitsui Petrochemical Industries Ltd.: *See—*
Miki, Hisaya; and Yasuhara, Mitsuki, 4,219,507, Cl. 568-411.000.

Mitsusada, Kazumichi: *See—*
Ogiue, Katsumi; Nitta, Takahisa; Mitsusada, Kazumichi; Iwabuchi, Masato; and Odaka, Masanori, 4,219,369, Cl. 148-1.500.

Mittex Aktiengesellschaft: *See—*
Hussmann, Peter, 4,219,341, Cl. 55-179.000.

Miwa, Naoto; Ouki, Masami; Tanaka, Katsuhiko; and Suzuki, Masatosi, to Nippondenso Co., Ltd. Sintered body of zirconia for oxygen concentration sensor. 4,219,359, Cl. 106-39.500.

Miyake, Makoto; Shiozaki, Tomoharu; Shioi, Shunsuke; Shiraishi, Tetsuo; and Matsushita, Takao, to Kanzaki Paper Manufacturing Co., Ltd. Method of making oil-containing microcapsules. 4,219,439, Cl. 252-316.000.

Miyake, Toshio, to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo. Process for producing a sweetener. 4,219,571, Cl. 426-48.000.

Miyoshi, Isao: *See—*
Inoue, Osamu; Abe, Masaru; Chiba, Koji; and Miyoshi, Isao, 4,219,601, Cl. 428-222.000.

Mizelle, Ned W., to Hoover Universal, Inc. Box spring assembly with improved stiffness characteristics. 4,218,790, Cl. 5-247.000.

Mizukami, Koichiro: *See—*
Migitaka, Masatoshi; and Mizukami, Koichiro, 4,219,731, Cl. 250-310.000.

Mizusawa Kagaku Kogyo Kabushiki Kaisha: *See—*
Sugahara, Yujiro; Usui, Koichi; Ogawa, Masahide; Kurosaki, Hideaki; and Imafuku, Shigehisa, 4,219,535, Cl. 423-328.000.

Mizutani, Hiroyuki; and Uehara, Toshio, to Tokyo Shibaura Electric Co., Ltd. Computed tomography using radiation. 4,219,876, Cl. 364-414.000.

Mo och Domsjo Aktiebolag: *See—*
Schneider, Gerhard, 4,218,821, Cl. 30-254.000.

Mobil Oil Corporation: *See—*
Chibnik, Sheldon, 4,219,431, Cl. 252-33.400.
Haddad, James H.; Heffley, Scott A.; and Owen, Hartley, 4,219,407, Cl. 208-151.000.
Herrington, F. John, Jr., 4,219,516, Cl. 264-40.700.
Kuehl, Guenter H.; and Sherry, Howard S., 4,219,406, Cl. 208-120.000.
Kuehl, Guenter H.; and Sherry, Howard S., 4,219,446, Cl. 252-453.000.

Mobley, Loreley S.: *See—*
Fieser, Arthur H.; and Mobley, Loreley S., 4,219,113, Cl. 198-774.000.

Mochizuki, Yasuhiro; Hachino, Hiroaki; Misawa, Yutaka; and Wakui, Yoko, to Hitachi, Ltd. Method of fabricating a semiconductor device. 4,219,373, Cl. 148-187.000.

Moench, Clauspeter, to Steigerwald Strahltechnik GmbH. Energy beam welding with filler material. 4,219,720, Cl. 219-121.0EM.

Molday, Robert S.: *See—*
Yen, Shino-Ping S.; Rembaum, Alan; and Molday, Robert S., 4,219,411, Cl. 209-213.000.

Molins Limited: *See—*
Bolt, Reginald C., 4,219,727, Cl. 219-384.000.

Momonoi, Kaishu: *See—*
Saikawa, Isamu; Takano, Shuntaro; Yoshida, Chosaku; Takashima, Okuta; Momonoi, Kaishu; Kuroda, Seietsu; Komatsu, Miwako; Yasuda, Takashi; and Kodama, Yutaka, 4,219,554, Cl. 424-250.000.

Monsanto Company: *See—*
Donermeyer, Donald D.; and Martins, Joseph G., 4,219,458, Cl. 260-40.00R.
Donermeyer, Donald D.; and Martins, Joseph G., 4,219,459, Cl. 260-40.00R.
Donermeyer, Donald D.; and Martins, Joseph G., 4,219,460, Cl. 260-40.00R.
Miles, James A., 4,219,510, Cl. 260-936.000.
Papanu, Victor D., 4,219,437, Cl. 252-174.210.

Montanwerke Walter GmbH: *See*—
Hoffmann, Friedrich; Grafe, Werner; Deiss, Siegfried; and Schlotterer, Willy, 4,219,292, Cl. 407-63.000.
Mookherjee, Braja D.: *See*—
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., 4,219,451, Cl. 252-522.00R.
Moore, Archie S., to Mid-West Conveyor Company, Inc. Accumulation conveyor brake. 4,219,115, Cl. 198-781.000.
Moore, Curtis L.; and Seidel, Martin P., to Westinghouse Electric Corp. Electrical inductive apparatus. 4,219,791, Cl. 336-58.000.
Moore, George G. I., to Riker Laboratories, Inc. Anti-inflammatory method. 4,219,501, Cl. 260-562.00A.
Moore, Loyd C.; and Hecker, Klaus J., to United States of America, Navy. Protection device for pulsed radar. 4,219,817, Cl. 343-17.1PF.
Moore, Michael G.: *See*—
Koch, David A.; Moore, Michael G.; and Pawlus, Arthur L., 4,219,706, Cl. 200-4.000.
Morel, Henri, to ITW de France. Screw fastener for a round hole. 4,218,954, Cl. 85-81.000.
Morel, Robert: *See*—
Batteux, Pierre; and Morel, Robert, 4,219,790, Cl. 335-16.000.
Mori, Hidetomo; and Ishizawa, Shingo, to Hitachi, Ltd. Volume control system for compressor unit. 4,219,312, Cl. 417-295.000.
Mori, Hiroyuki; Iwanaga, Yukiya; Akamatsu, Kazuo; and Kubota, Hayato, to Fuji Oil Company, Limited. Hard butter composition. 4,219,584, Cl. 426-607.000.
Mori, Masatsugu: *See*—
Naito, Akinori; Shimizu, Masao; Mori, Masatsugu; and Matsubara, Yukihiro, 4,218,930, Cl. 74-216.000.
Moriguchi, Kisoo: *See*—
Sakurai, Hisaya; Moriguchi, Kisoo; and Katayama, Yoshihiko, 4,219,453, Cl. 260-23.00H.
Morimoto, Taizo: *See*—
Matsumoto, Sakuzo; Morimoto, Taizo; and Fujie, Testuo, 4,218,823, Cl. 33-166.000.
Morimura, Syoji: *See*—
Soma, Nobuo; Morimura, Syoji; Yoshioka, Takao; and Kurumada, Tomoyuki, 4,219,465, Cl. 260-45.8NT.
Moritani, Nakanobu; Oda, Hajime; and Samejima, Toshihide, to Kabushiki Kaisha Seikosha. Electronic timer. 4,218,871, Cl. 368-109.000.
Morohoshi, Fumio: *See*—
Ishida, Shuichi; Yoshikawa, Haruzo; and Morohoshi, Fumio, 4,218,874, Cl. 84-484.000.
Morrow, Richard: *See*—
Triplett, William C.; Brauer, Walter H.; Burke, Robert; and Morrow, Richard, 4,218,923, Cl. 73-623.000.
Morsing, Gijsbertus B., to Daisy Systems Holland B.V. Servocontrol having digitalized distance determination and variable gain/attenuation coefficients. 4,219,765, Cl. 318-561.000.
Morville, Malcolm: *See*—
Barnish, Ian T.; Cross, Peter E.; Danilewicz, John C.; Morville, Malcolm; and Page, Michael G., 4,219,566, Cl. 424-317.000.
Mosley, Alan: *See*—
Gray, George M.; Kelly, Stephen M.; McDonnell, Damien G.; and Mosley, Alan, 4,219,256, Cl. 350-346.000.
Mostek Corporation: *See*—
Athanas, Terry G., 4,219,379, Cl. 156-653.000.
Moteurs Leroy-Somer: *See*—
Gobaud, Michel, 4,219,768, Cl. 322-8.000.
Motorola, Inc.: *See*—
Fajen, Lyle A.; Malcolm, Robert B.; and McDonald, Thomas W., 4,219,815, Cl. 343-12.0MD.
Stein, Marc T., 4,219,782, Cl. 330-257.000.
Teytaud, Claude, 4,219,249, Cl. 339-5.00R.
Valek, Robert J., 4,219,801, Cl. 340-347.0DA.
Mount, Gordon L.; and Kirtland, Howard W., to Carrier Corporation. Diffuser control. 4,219,305, Cl. 415-13.000.
Mouton, William J., Jr.; and Thompson, David F. Submarine turbine power plant. 4,219,303, Cl. 415-7.000.
Mueller, Kurt F.: *See*—
Cziesla, Manfred J.; and Mueller, Kurt F., 4,219,374, Cl. 149-75.000.
Muhiemann, Hans R.: *See*—
Schmid, Hans; and Muhiemann, Hans R., 4,219,541, Cl. 424-54.000.
Muir, James R.; and Muir, Ruby J. Ski supported vehicle. 4,219,207, Cl. 280-21.00A.
Muir, Ruby J.: *See*—
Muir, James R.; and Muir, Ruby J., 4,219,207, Cl. 280-21.00A.
Muller, Alf; and Loper, Bernd, to Daimler-Benz Aktiengesellschaft. Ventilating ornamental wheel cover for solid wheels. 4,219,241, Cl. 301-6.0CS.
Muller, Bernd: *See*—
Seidelmann, Dieter; Schmiechen, Ralph; Paschelke, Gert; and Muller, Bernd, 4,219,551, Cl. 424-248.540.
Vorbruggen, Helmut; Skuballa, Werner; Raduchel, Bernd; Losert, Wolfgang; Loge, Olaf; Muller, Bernd; and Mannesmann, Gerda, 4,219,479, Cl. 424-263.000.
Muller, Hans, to Chemap AG. Arrangement for and a process of filtering a contaminated medium. 4,219,420, Cl. 210-82.000.
Muller-Matthesius, Reinhard: *See*—
Stark, Joseph; and Muller-Matthesius, Reinhard, 4,219,645, Cl. 536-27.000.
Muller, Wolfgang: *See*—
Obenaus, Fritz; Droste, Wilhelm; Streubel, Wolf; Zolffel, Michael; and Muller, Wolfgang, 4,219,678, Cl. 568-697.000.
Muni Recovery Systems, Inc.: *See*—
Bielicki, Lucian C., 4,219,127, Cl. 220-269.000.
Munnikhuysen, Janetlee. Face protector. 4,218,777, Cl. 2-9.000.
Muntwyler, Rene; and de Sousa, Bernardo, to Ciba-Geigy Corporation. Method of protecting keratinous material from attack by insects that feed on keratin. 4,219,593, Cl. 428-15.000.
Murabayashi, Katuyoshi: *See*—
Numaguchi, Toru; and Murabayashi, Katuyoshi, 4,218,959, Cl. 92-103.0SD.
Murakami, Hiroyasu: *See*—
Suzuki, Masayuki; Yamamichi, Masayoshi; Murakami, Hiroyasu; and Ito, Tadashi, 4,219,267, Cl. 354-289.000.
Murakami, Katsumi: *See*—
Ohkubo, Masharu; Ando, Yujiro; Honma, Toshio; Murakawa, Shuji; Murakami, Katsumi; and Furuichi, Katsushi, 4,219,271, Cl. 355-14.00R.
Murakawa, Shuji: *See*—
Ohkubo, Masharu; Ando, Yujiro; Honma, Toshio; Murakawa, Shuji; Murakami, Katsumi; and Furuichi, Katsushi, 4,219,271, Cl. 355-14.00R.
Murata Manufacturing Co., Ltd.: *See*—
Nishiyama, Hiroshi; Ogawa, Toshio; and Mashio, Tasuku, 4,219,608, Cl. 428-411.000.
Nishizawa, Hideo, 4,219,796, Cl. 338-163.000.
Murayama, Hiroo, to Nifco, Inc. Holder for electronic and electrical parts. 4,219,172, Cl. 248-27.300.
Murphy, Francis G.: *See*—
Klinedinst, Keith A.; and Murphy, Francis G., 4,219,443, Cl. 252-425.300.
Murrell, Donald L., to Post Office, The. The Treatment of magnetic garnet film. 4,219,610, Cl. 428-469.000.
Murtha, Timothy P., to Phillips Petroleum Company. Aromatic hydroalkylation catalyst using iridium on zeolites. 4,219,689, Cl. 585-425.000.
Muschelknautz, Edgar; and Juse, Rudolf, to Bayer Aktiengesellschaft. Device and process for cooling liquids containing solids. 4,219,380, Cl. 159-47.00R.
Muskin Corporation: *See*—
Smith, Clarence G., Jr., 4,219,423, Cl. 210-169.000.
Mustoe, Edward H., to Esquire, Inc. Incandescent lamp dimmer providing control voltage IES square law compliance correction. 4,219,761, Cl. 315-307.000.
Mutziger, John S., to Deere & Company. Digital thermometer modification for telemetry and analog recording. 4,218,916, Cl. 73-359.00R.
N. Greening Limited: *See*—
Hassall, Anthony G., 4,219,412, Cl. 209-399.000.
Naganawa, Hiroshi: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Naganawa, Hiroshi; Ishizuka, Masaaki; Shibamoto, Norio; Oki, Toshikazu; and Inui, Taiji, 4,219,622, Cl. 435-78.000.
Nagano, Takahiro: *See*—
Naito, Masayoshi; Nagano, Takahiro; and Ogawa, Takuzo, 4,219,832, Cl. 357-38.000.
Nagase, Toshiro, to Tokico Ltd. Gas spring. 4,219,190, Cl. 267-65.00R.
Nagashima, Kazuo: *See*—
Sakai, Yasuo; Nagashima, Kazuo; and Goto, Harukatsu, 4,218,850, Cl. 51-49.000.
Nagel, Otto: *See*—
Sinn, Richard; Nagel, Otto; Sander, Bruno; Bonitz, Eckhard; Scherling, Kurt; Zettler, Hans D.; Stoehr, Dieter; and Berbner, Heinz, 4,219,512, Cl. 264-11.000.
Nagumo, Shin-ichi: *See*—
Kuroda, Hiroshi; Nakajima, Yasuo; Hayashi, Yoshimasa; and Nagumo, Shin-ichi, 4,218,880, Cl. 60-278.000.
Nagy, Gabor: *See*—
Knoll, Josef; Meszaros, Zoltan; Hermecz, Istvan; Fulop, Ferenc; Bernath, Gabor; Virag, Sandor; Nagy, Gabor; and Szentmiklosi, Peter, 4,219,649, Cl. 544-282.000.
Naito, Akinori; Shimizu, Masao; Mori, Masatsugu; and Matsubara, Yukihiro, to NTN Toyo Bearing Co., Ltd. False twist spindle friction disc and method of producing same. 4,218,930, Cl. 74-216.000.
Naito, Masayoshi; Nagano, Takahiro; and Ogawa, Takuzo, to Hitachi, Ltd. Thyristor having low on-state voltage with low areal doping emitter region. 4,219,832, Cl. 357-38.000.
Nakada, Akira; Aoki, Eiichiro; Oya, Akiyoshi; Okumura, Takatoshi; Uchiyama, Yasuji; and Yamaga, Eiichi, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument of key code processing type. 4,218,948, Cl. 84-1.010.
Nakagawa, Hirohide: *See*—
Hashimoto, Shintarou; Nakagawa, Hirohide; and Nishimura, Toshio, 4,218,876, Cl. 368-10.000.
Nakagawa, Seiichi; Yonezawa, Akira; and Kikuchi, Masatsugu, to Nihon Denshi Kabushiki Kaisha. Magnetic electron lens. 4,219,732, Cl. 250-396.0ML.
Nakajima, Yasuo: *See*—
Kuroda, Hiroshi; Nakajima, Yasuo; Hayashi, Yoshimasa; and Nagumo, Shin-ichi, 4,218,880, Cl. 60-278.000.
Nakako, Yukio; and Yokota, Shizuo, to Kobe Steel, Ltd. Coal liquefaction process and apparatus therefor. 4,219,403, Cl. 208-10.000.
Nakamura, Sadayuki: *See*—
Fujiwara, Tatsuo; Abeyama, Shozo; Ishida, Kiyohito; and Nakamura, Sadayuki, 4,219,356, Cl. 75-126.00L.
Nakamura, Yasuo: *See*—
Fujita, Masayuki; Kubo, Sueki; and Nakamura, Yasuo, 4,218,989, Cl. 118-713.000.

Nakasugi, Hajime; Imagumbai, Masana; and Tamehiro, Hiroshi, to Nippon Steel Corporation. Process for producing high-tension bainitic steel having high-toughness and excellent weldability. 4,219,371, Cl. 148-12.00F.
Naokawa, Toyoziro, to Toko Kabushiki Kaisha. Transistor amplifier circuit. 4,219,781, Cl. 330-254.000.
Nara, Harry R.: *See*—
Wiltshire, Arthur J.; Nara, Harry R.; LeBreton, Edward T.; and Bliley, Ward L., 4,219,125, Cl. 220-5.00A.
Nassef, N. A.; and Streebin, Leale E. Method and apparatus for disposal of organic wastes. 4,219,415, Cl. 210-32.000.
Nathasingh, Davidson M.: *See*—
DeCristofaro, Nicholas J.; Freilich, Alfred; and Nathasingh, Davidson M., 4,219,355, Cl. 75-123.00B.
National Computer Systems, Inc.: *See*—
Thibodeau, James, 4,219,736, Cl. 250-557.000.
National Semiconductor Corporation: *See*—
Huang, Jen-yen, 4,219,797, Cl. 338-333.000.
National Service Industries, Inc.: *See*—
Bowman, Robert W.; and Brown, Raymond A., 4,219,868, Cl. 362-147.000.
Bowman, Robert W.; and Brown, Raymond A., 4,219,869, Cl. 362-147.000.
National Starch and Chemical Corp.: *See*—
Rubens, Roger W., 4,219,646, Cl. 536-109.000.
Naylor, Carl A., to Allis-Chalmers Corporation. Apparatus for nondestructive testing of small blind bores utilizing the dry magnetic particle method. 4,219,772, Cl. 324-216.000.
Needham, Brian J.; and Miller, John, to Fisons Limited. Process for preparing tetrahalocyclohexanone. 4,219,505, Cl. 568-348.000.
Negishi, Naoki: *See*—
Tamura, Takaaki; Ozawa, Tomeyoshi; Ito, Wataru; Fujita, Norihiko; and Negishi, Naoki, 4,219,424, Cl. 210-201.000.
Nelson, David M., to United States Gypsum Company. Plastic foam-filled door having integral plastic housing defining lock cylinder and lock bolt chambers. 4,218,848, Cl. 49-503.000.
Nelson, Norman A.: *See*—
Bundy, Gordon L.; and Nelson, Norman A., 4,219,662, Cl. 560-53.000.
Nemish, James. Double set hair styling roller device. 4,219,034, Cl. 132-40.000.
Nemoto, Kazuyuki: *See*—
Terada, Katumi; and Nemoto, Kazuyuki, 4,219,764, Cl. 318-48.000.
Nerf, Owe: *See*—
Danfors, Per; Fahlen, Nils; and Nerf, Owe, 4,219,856, Cl. 361-15.000.
Neri, Paolo: *See*—
Pende, Berislav; and Neri, Paolo, 4,219,467, Cl. 260-112.00R.
Nesje, Arnfinn. Stove-hearth combinations. 4,219,006, Cl. 126-192.000.
Neuray, Dieter: *See*—
Nielinger, Werner; Neuray, Dieter; and Brassat, Bert, 4,219,636, Cl. 528-318.000.
Newman, Joseph W. Simultaneous neck strengthener, neck protector, neck rehabilitator. 4,219,193, Cl. 272-94.000.
Newton, Richard C., to Phillips Petroleum Company. Spun-like continuous multifilament yarn. 4,218,869, Cl. 57-245.000.
NGK Insulators Ltd.: *See*—
Yoshida, Takuji, 4,219,425, Cl. 210-225.000.
Nichiro Kogyo Company, Limited: *See*—
Kasuga, Yoshiaki, 4,218,969, Cl. 100-32.000.
Nichols, Charles R., to Quad/Eight Electronics. Signal-processing and conversion systems. 4,219,880, Cl. 364-718.000.
Nico-Pyrotechnik Hanns-Juergen Diederichs KG.: *See*—
Luebbers, Willi, 4,218,976, Cl. 102-49.100.
Nielinger, Werner; Neuray, Dieter; and Brassat, Bert, to Bayer Aktiengesellschaft. Preparation polyamides of isophthalic acid and hexamethylene diamine with formic acid. 4,219,636, Cl. 528-318.000.
Nielsen, Norman A.; and Rao, V. N. Mallikarjuna, to Du Pont de Nemours, E. I., and Company. Methanol oxidation/dehydrogenation over silver-gold alloy. 4,219,509, Cl. 568-473.000.
Nifco, Inc.: *See*—
Murayama, Hiroo, 4,219,172, Cl. 248-27.300.
Nihon Denshi Kabushiki Kaisha: *See*—
Nakagawa, Seiichi; Yonezawa, Akira; and Kikuchi, Masatsugu, 4,219,732, Cl. 250-396.0ML.
Niks, Anton; Van Hijfte, Willy H. P.; and Goethals, Rafael A. J., to Compagnie Neerlandaise de l'Azote. Process for urea granulation. 4,219,589, Cl. 427-213.000.
Nilssen, Albert G.; and Hermanson, Spencer L., to Wescom, Inc. Telephone supervision system using DTMF signals. 4,219,699, Cl. 179-16.0AA.
Nippon Chemiphar Company Limited: *See*—
Fujimoto, Yasuo; and Kishi, Yasuo, 4,219,477, Cl. 260-239.100.
Nippon Electric Co., Ltd.: *See*—
Ishii, Eiichi, 4,219,778, Cl. 455-205.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Nakada, Akira; Aoki, Eiichiro; Oya, Akiyoshi; Okumura, Takatoshi; Uchiyama, Yasuji; and Yamaga, Eiichi, 4,218,948, Cl. 84-1.010.
Nippon Hoso Kyokai: *See*—
Nonaka, Yasuhiko; Goto, Naohiro; and Shidara, Keiichi, 4,219,831, Cl. 357-31.000.
Nippon Kokan Kabushiki Kaisha: *See*—
Ohsumi, Atushi; Yamagishi, Yoshinao; Daigo, Kaoru; Yamamoto, Tomio; and Yamada, Katsuya, 4,219,844, Cl. 358-106.000.
Sato, Kunihiko; Urata, Tetsuro; Asamoto, Tetsuhiro; Asakawa, Kobun; Uebayashi, Takeo; and Taguchi, Haruo, 4,219,718, Cl. 219-69.00M.
Nippon Steel Corporation: *See*—
Nakasugi, Hajime; Imagumbai, Masana; and Tamehiro, Hiroshi, 4,219,371, Cl. 148-12.00F.
Nippondenso Co., Ltd.: *See*—
Katou, Aritsune, 4,219,752, Cl. 310-156.000.
Miwa, Naoto; Ouki, Masami; Tanaka, Katsuhiko; and Suzuki, Masatosi, 4,219,359, Cl. 106-39.500.
Nishida, Isamu; Otani, Tadashi; and Yajima, Kenji, to Kabushiki Kaisha Daini Seikosha. Mounting structure of a quartz crystal unit. 4,219,756, Cl. 310-348.000.
Nishimura, Toshimichi; Yamanaka, Seisuke; and Shimada, Masaru, to Sony Corporation. White balance control circuit. 4,219,841, Cl. 358-29.000.
Nishimura, Toshio: *See*—
Hashimoto, Shintarou; Nakagawa, Hirohide; and Nishimura, Toshio, 4,218,876, Cl. 368-10.000.
Nishiyama, Hiroshi; Ogawa, Toshio; and Mashio, Tasuku, to Murata Manufacturing Co., Ltd. Piezoelectric crystalline film of zinc oxide and method for making same. 4,219,608, Cl. 428-411.000.
Nishizawa, Hideo, to Murata Manufacturing Co., Ltd. Semi-fixed type variable resistor. 4,219,796, Cl. 338-163.000.
Nissan Motor Company, Limited: *See*—
Aoyama, Syunichi, 4,218,995, Cl. 123-90.550.
Kuroda, Hiroshi; Nakajima, Yasuo; Hayashi, Yoshimasa; and Nagumo, Shin-ichi, 4,218,880, Cl. 60-278.000.
Sawada, Hiroji; and Igawa, Tatsuo, 4,219,707, Cl. 200-19.00R.
Nitta, Takahisa: *See*—
Ogiue, Katsumi; Nitta, Takahisa; Mitsusada, Kazumichi; Iwabuchi, Masato; and Odaka, Masanori, 4,219,369, Cl. 148-1.500.
Nitta, Tohei; Shibuya, Yoshikazu; and Fuziwara, Yukio, to Mitsubishi Denki Kabushiki Kaisha. Lightning arrester device. 4,219,862, Cl. 361-120.000.
Nitto Chemical Industry Co., Ltd.: *See*—
Doi, Shunichi; and Kamogawa, Masatake, 4,219,498, Cl. 260-513.00N.
NLB Corporation: *See*—
Goerss, William G., 4,219,155, Cl. 239-124.000.
Noga, Edward J.: *See*—
Hartmann, James X.; and Noga, Edward J., 4,219,543, Cl. 424-89.000.
Noma, Kouichi; Umeda, Tsutomu; and Ogushi, Tsuneo, to Sanyo Electric Co., Ltd.; and Tokyo Sanyo Electric Co., Ltd. Molded article, the method for manufacturing the same and the dies therefor. 4,219,598, Cl. 428-161.000.
Nonaka, Yasuhiko; Goto, Naohiro; and Shidara, Keiichi, to Hitachi, Ltd.; and Nippon Hoso Kyokai. Targets for use in photoconductive image pickup tubes. 4,219,831, Cl. 357-31.000.
Noritake Iron Works Co., Ltd.: *See*—
Yoshida, Takuji, 4,219,425, Cl. 210-225.000.
Normand, Alfred, to Societe Chimique de la Grande Paroisse, Azote et Produits Chimiques. Apparatus for generating a reducing atmosphere for heat-treating installations. 4,219,528, Cl. 422-62.000.
Northern Telecom Limited: *See*—
Chu, Pak-Jong, 4,218,808, Cl. 16-141.000.
Norton Company: *See*—
Draper, Weston E., Jr., 4,219,018, Cl. 128-152.000.
Rue, Charles V., 4,218,851, Cl. 51-168.000.
Nosco, Louis C.: *See*—
Tersteeg, Glenn E.; Nosco, Louis C.; Meyer, Robert J.; and Whitcomb, Rodney J., 4,219,529, Cl. 422-65.000.
Noshimura, Yusaku; Koseki, Yasuo; Kubota, Masayoshi; Kubota, Shoji; and Takahashi, Sankichi, to Hitachi, Ltd. Aqueous alkali or alkaline treat and heat regeneration of NH_4^+ adsorbed zeolite or zeolite-carbon used to treat waste water. 4,219,441, Cl. 252-412.000.
Nott, Alan J.: *See*—
Price, William M.; and Nott, Alan J., 4,219,408, Cl. 209-5.000.
Noveske, Walter J.: *See*—
Babb, Larry F.; and Noveske, Walter J., 4,218,802, Cl. 15-104.3SN.
Nozawa, Shinkichi: *See*—
Konoki, Keizo; and Nozawa, Shinkichi, 4,219,492, Cl. 260-449.500.
NTN Toyo Bearing Co., Ltd.: *See*—
Naito, Akinori; Shimizu, Masao; Mori, Masatsugu; and Matsubara, Yukihiro, 4,218,930, Cl. 74-216.000.
Numaguchi, Toru; and Murabayashi, Katuyoshi, to Daicel Ltd. Pressure regulating diaphragm. 4,218,959, Cl. 92-103.0SD.
Nutridan Engineering A/S: *See*—
Pedersen, Jorgen W.; and Lausen, Thorkild, 4,219,577, Cl. 426-264.000.
N.V. Raychem S.A.: *See*—
D'Haeyer, Andre H. L., 4,219,051, Cl. 138-178.000.
Nyberg, David D.: *See*—
Cammack, Travers K., II; and Nyberg, David D., 4,219,607, Cl. 428-411.000.
NYBY Bruk AB: *See*—
Jonsson, Arne, 4,218,812, Cl. 29-402.120.
Oana, Katsuo. Safe cartridge for gas. 4,219,126, Cl. 220-89.00A.
Oba, Yoichi; Kano, Tsuyoshi; Hayashi, Masaaki; Takada, Hiroshi; Kanda, Katuzo; and Eguchi, Shusaku, to Hitachi, Ltd.; and Kasei Optonix, Ltd. Process for producing pigment-coated phosphors. 4,219,587, Cl. 427-64.000.
Obenaus, Fritz; Droste, Wilhelm; Streubel, Wolf; Zolffel, Michael; and Muller, Wolfgang, to Chemische Werke Huls AG. Process for preparing pure methyl tert.-butyl ether. 4,219,678, Cl. 568-697.000.

Oda, Hajime: *See*—
Moritani, Nakanobu; Oda, Hajime; and Samejima, Toshihide, 4,218,871, Cl. 368-109.000.
Oda, Noriyuki: *See*—
Kurokawa, Masahiro; Oda, Noriyuki; and Shibamoto, Nobuji, 4,219,070, Cl. 165-11.00R.
Oda, Shinichi; Aoyagi, Shoji; Kuroda, Takio; and Tozaki, Eishun, to Kanzaki Paper Manufacturing Co., Ltd. Recording material for use in a pressure sensitive copying system. 4,219,220, Cl. 282-27.500.
Odaka, Masanori: *See*—
Ogiue, Katsumi; Nitta, Takahisa; Mitsusada, Kazumichi; Iwabuchi, Masato; and Odaka, Masanori, 4,219,369, Cl. 148-1.500.
O'Day, David L., to American Hospital Supply Corporation. Bed rail hanger system. 4,219,177, Cl. 248-215.000.
Ogawa, Masahide: *See*—
Sugahara, Yujiro; Usui, Koichi; Ogawa, Masahide; Kurosaki, Hideaki; and Imafuku, Shigehisa, 4,219,535, Cl. 423-328.000.
Ogawa, Masaya, to Japan Synthetic Rubber Co., Ltd. Process for producing vinylnorbornene and/or tetrahydroindene. 4,219,688, Cl. 585-361.000.
Ogawa, Takuzo: *See*—
Naito, Masayoshi; Nagano, Takahiro; and Ogawa, Takuzo, 4,219,832, Cl. 357-38.000.
Ogawa, Toshio: *See*—
Nishiyama, Hiroshi; Ogawa, Toshio; and Mashio, Tasuku, 4,219,608, Cl. 428-411.000.
Ogiue, Katsumi; Nitta, Takahisa; Mitsusada, Kazumichi; Iwabuchi, Masato; and Odaka, Masanori, to Hitachi, Ltd. Method of making semiconductor integrated circuit device. 4,219,369, Cl. 148-1.500.
Ogushi, Tsuneo: *See*—
Noma, Kouichi; Umeda, Tsutomu; and Ogushi, Tsuneo, 4,219,598, Cl. 428-161.000.
Ohio Thermometer Company, The: *See*—
Stortz, Robert K., 4,218,917, Cl. 73-378.000.
Ohkubo, Masharu; Ando, Yujiro; Honma, Toshio; Murakawa, Shuji; Murakami, Katsumi; and Furuichi, Katsushi, to Canon Kabushiki Kaisha. Image forming method and device for controlling image density. 4,219,271, Cl. 355-14.00R.
Ohshima, Yoshikuni: *See*—
Furukawa, Masahiro; and Ohshima, Yoshikuni, 4,219,077, Cl. 165-114.000.
Ohsumi, Atushi; Yamagishi, Yoshinao; Daigo, Kaoru; Yamamoto, Tomio; and Yamada, Katsuya, to Nippon Kokan Kabushiki Kaisha; Fuji Toyuki Co., Ltd.; and Yamada, Katsuya. Apparatus for detecting the surface flaws of a red-heated metal part. 4,219,844, Cl. 358-106.000.
Ohtsuka Giken Kogyo Kabushiki Kaisha: *See*—
Horimoto, Toshio, 4,218,914, Cl. 73-45.500.
Ohuchi, Shigehiro: *See*—
Taniguchi, Itsuki; Itoh, Ryuichi; Iwatsuki, Toshihiro; and Ohuchi, Shigehiro, 4,219,457, Cl. 260-38.000.
Oikawa, Akira: *See*—
Tamura, Akira; Suzuki, Yasuo; and Oikawa, Akira, 4,219,066, Cl. 152-353.00G.
Ojeda, Ariel G. Chemical composition for the coating of electrodes for manual arc welding. 4,219,606, Cl. 428-386.000.
Okada, Hachioji, to Olympus Optical Co., Ltd. Forward viewing endoscope with specific cover for photographic cassette opening. 4,219,013, Cl. 128-4.000.
Okada, Kazuya; Matsuzawa, Hideo; Ishii, Hiromichi; and Kobayashi, Masao, to Mitsubishi Rayon Co., Ltd. Process for producing unsaturated aldehydes and unsaturated carboxylic acids. 4,219,670, Cl. 562-546.000.
Okagami, Akio: *See*—
Tsuchiya, Fujio; Yamamoto, Kenzo; Yamaguchi, Katsunobu; and Okagami, Akio, 4,219,669, Cl. 562-486.000.
Okamoto, Yoshinaga: *See*—
Shibazaki, Hiroji; Edagawa, Setsuji; and Okamoto, Yoshinaga, 4,219,590, Cl. 427-215.000.
Oki, Toshikazu: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Naganawa, Hiroshi; Ishizuka, Masaaki; Shibamoto, Norio; Oki, Toshikazu; and Inui, Taiji, 4,219,622, Cl. 435-78.000.
Oku, Nobuyuki: *See*—
Fujii, Tatsuo; Tabata, Yoichi; Oku, Nobuyuki; and Shishido, Yoshiaki, 4,219,296, Cl. 414-273.000.
Okuda, Kazumi. Diamond with molybdenum bonded thereto. 4,219,199, Cl. 274-38.000.
Okumura, Takatoshi: *See*—
Nakada, Akira; Aoki, Eiichiro; Oya, Akiyoshi; Okumura, Takatoshi; Uchiyama, Yasuji; and Yamaga, Eiichi, 4,218,948, Cl. 84-1.010.
Olin Corporation: *See*—
Fuzesi, Stephen, 4,219,624, Cl. 521-171.000.
Olodort, Robert A. Editing machine. 4,219,259, Cl. 352-129.000.
Olschewski, Armin: *See*—
Brandenstein, Manfred; Olschewski, Armin; Finzel, Sigismund; Gossmann, Willi; and Stark, Josef, 4,219,240, Cl. 301-5.700.
Olsen, Robert C.: *See*—
Weaver, William N.; Olsen, Robert C.; and Klygis, Mindaugas J., 4,219,117, Cl. 206-150.000.
Olson, Gary L.; and Saucy, Gabriel, to Hoffmann-La Roche Inc. Process for producing vitamin A. 4,219,506, Cl. 568-496.000.
Olympia Werke AG: *See*—
Bruckel, Dieter; and Jahn, Gunther, 4,219,272, Cl. 355-16.000.
Olympus Optical Co., Ltd.: *See*—
Araki, Naomiki; and Inoue, Yasuo, 4,219,258, Cl. 351-16.000.
Matsumoto, Sakuzo; Morimoto, Taizo; and Fujie, Testuo, 4,218,823, Cl. 33-166.000.
Okada, Hachioji, 4,219,013, Cl. 128-4.000.
Terada, Katumi; and Nemoto, Kazuyuki, 4,219,764, Cl. 318-48.000.
Omron Tateisi Electronics Co.: *See*—
Haruki, Takanobu, 4,219,151, Cl. 235-379.000.
O'Neill, Cormac G.; and Foster, Charles E., to Physics International Company. Electromotive actuator. 4,219,755, Cl. 310-348.000.
Onopchenko, Anatoli; Sabourin, Edward T.; and Selwitz, Charles M., to Gulf Research & Development Company. Selective hydrogenation of nitro groups on nitroaromatic acetylenes using an unsupported cobalt polysulfide catalyst. 4,219,679, Cl. 568-705.000.
Ooms, Adam: *See*—
Holster, Peter L.; and Ooms, Adam, 4,219,321, Cl. 425-384.000.
Opelika Manufacturing Corporation: *See*—
Simonoff, Ely, 4,219,140, Cl. 223-87.000.
Oran, William A.; Berge, LeRoy H.; Reiss, Donald A.; and Johnson, Jerry L., to United States of America, National Aeronautics and Space Administration. Method and apparatus for shaping and enhancing acoustical levitation forces. 4,218,921, Cl. 73-505.000.
Organon Teknika B.V.: *See*—
Spekle, Hendrikus J.; and Brants, Johannes P., 4,219,426, Cl. 210-232.000.
Orient Kagaku Kogyo K.K.: *See*—
Tsuchiya, Fujio; Yamamoto, Kenzo; Yamaguchi, Katsunobu; and Okagami, Akio, 4,219,669, Cl. 562-486.000.
Osborne, Jon L.; and Flora, Barney S., to Exxon Nuclear Company, Inc. PWR Integral tie plate and locking mechanism. 4,219,386, Cl. 176-78.000.
Osburg, Dieter, to Jagenberg Werke Aktiengesellschaft. Revolving cross cutter. 4,218,943, Cl. 83-304.000.
Oshiro, Susumu; and Yoshida, Morihiko, to Fuji Photo Optical Co., Ltd. Light source device for endoscope which controls the voltage across a single light source for performing both illumination and photography. 4,219,014, Cl. 128-6.000.
Ostergren, William F.: *See*—
Hale, John K.; and Ostergren, William F., 4,219,163, Cl. 239-662.000.
Ostrowski, Diane L.: *See*—
Williams, Earl V.; and Ostrowski, Diane L., 4,219,136, Cl. 222-450.000.
Otani, Tadashi: *See*—
Nishida, Isamu; Otani, Tadashi; and Yajima, Kenji, 4,219,756, Cl. 310-348.000.
Otsuka Chemical Co., Ltd.: *See*—
Manabe, Isao; and Inubushi, Akiyoshi, 4,219,433, Cl. 252-75.000.
Ouchi Shinko Kagaku Kogyo Kabushiki Kaisha: *See*—
Torii, Sigeru; Tanaka, Hideo; and Ukida, Masashi, 4,219,393, Cl. 204-78.000.
Ouki, Masami: *See*—
Miwa, Naoto; Ouki, Masami; Tanaka, Katsuhiko; and Suzuki, Masatosi, 4,219,359, Cl. 106-39.500.
Outboard Marine Corporation: *See*—
Bland, Gerald F., 4,218,955, Cl. 91-47.000.
Outokumpu Oy: *See*—
Rastas, Jussi K.; Fugleberg, Sigmund P.; Heimala, Seppo O.; Hultholm, Sitg-Erik; and Poijarvi, Jaakko T. I., 4,219,354, Cl. 75-101.00R.
Owen, Hartley: *See*—
Haddad, James H.; Heffley, Scott A.; and Owen, Hartley, 4,219,407, Cl. 208-151.000.
Owens-Corning Fiberglas Corporation: *See*—
Haynes, Eugene M., 4,219,345, Cl. 65-27.000.
Helser, Jerry L.; and Rigby, William H., Jr., 4,219,515, Cl. 264-37.000.
Miller, Everett R., deceased, 4,219,524, Cl. 264-216.000.
Owens, Fred V.: *See*—
Saggese, Michael F.; Owens, Fred V.; and Fila, Barbara, 4,219,640, Cl. 528-501.000.
Owens-Illinois, Inc.: *See*—
Amberg, Stephen W., 4,219,124, Cl. 215-12.00R.
Chang, Long F.; and Kontz, Robert F., 4,219,322, Cl. 425-547.000.
Oxenrider, Bryce C.: *See*—
Mares, Frank; Oxenrider, Bryce C.; and Woolf, Cyril, 4,219,625, Cl. 525-5.000.
Oya, Akiyoshi: *See*—
Nakada, Akira; Aoki, Eiichiro; Oya, Akiyoshi; Okumura, Takatoshi; Uchiyama, Yasuji; and Yamaga, Eiichi, 4,218,948, Cl. 84-1.010.
Oyama, Hiroichi, to Bridgestone Tire Company Limited. Method of manufacturing reinforced plastic hoses. 4,219,522, Cl. 264-173.000.
Ozaki, Kazuhiko: *See*—
Takata, Akira; and Ozaki, Kazuhiko, 4,219,310, Cl. 416-146.00A.
Ozawa, Shogo: *See*—
Maezawa, Nobuji; Takeo, Tadashi; and Ozawa, Shogo, 4,219,723, Cl. 219-125.100.
Ozawa, Tomeyoshi: *See*—
Tamura, Takaaki; Ozawa, Tomeyoshi; Ito, Wataru; Fujita, Norihiko; and Negishi, Naoki, 4,219,424, Cl. 210-201.000.
Pacific Engineering Co., Ltd.: *See*—
Kawamura, Isao, 4,219,793, Cl. 337-228.000.
Page, Michael G.: *See*—
Barnish, Ian T.; Cross, Peter E.; Danilewicz, John C.; Morville, Malcolm; and Page, Michael G., 4,219,566, Cl. 424-317.000.

Pako Corporation: *See—*
Stewart, James F., 4,218,801, Cl. 15-100.000.
Palmer, David W. Vented solar panel. 4,219,009, Cl. 126-422.000.
Panaro, Robert J.; and Jacobs, Philip C., Jr., to Gould Inc. Fusible element for time-lag fuses having current-limiting action. 4,219,795, Cl. 337-296.000.
Panizzon, Guido; Cepelinski, Jacob; Cowpland, Michael C. J.; and Wilker, Paul S., to Mitel Corporation. Partyline subscriber interface circuit. 4,219,700, Cl. 179-17.00B.
Panzica, Leonard J. Method and apparatus for stripping armatures. 4,218,818, Cl. 29-762.000.
Papanu, Victor D., to Monsanto Company. Copolymers of keto dicarboxylates. 4,219,437, Cl. 252-174.210.
Papineau, Milton D.: *See—*
Routh, Claude C.; Geren, Keith E.; Huisveld, Peter, Jr.; and Papineau, Milton D., 4,219,885, Cl. 367-1.000.
Para, Adolph: *See—*
Halasa, Adel F.; Hall, James E.; and Para, Adolph, 4,219,627, Cl. 525-89.000.
Paranjpe, Suresh C., to Mead Corporation, The. Skewed ink jet printer with overlapping print lines. 4,219,822, Cl. 346-75.000.
Parham, Thomas M., Jr.; and Sansing, James E., to Allied Chemical Corporation. Storage-stable nitrogen-zinc foliar spray compositions. 4,219,348, Cl. 71-30.000.
Park, Dong-Sil: *See—*
Breiter, Manfred W.; Chatterji, Debajyoti; King, Randall N.; and Park, Dong-Sil, 4,219,128, Cl. 220-453.000.
Park, Robert H.; Klas, Harold W.; and Estes, Nelson N., to United States of America, Navy. Torpedo detection streamer. 4,218,987, Cl. 114-245.000.
Parks, George W., Jr. Auger press. 4,219,586, Cl. 426-647.000.
Parrish, Charles A., to Sperry Rand Corporation. Automatic bale ejection drive. 4,218,866, Cl. 56-341.000.
Parssinen, Edwin J.; White, John F.; and Baron, Sidney, to United States of America, Navy. Double mass-loaded high power piezo-electric underwater transducer. 4,219,889, Cl. 367-158.000.
Paschelke, Gert: *See—*
Seidelmann, Dieter; Schmiechen, Ralph; Paschelke, Gert; and Muller, Bernd, 4,219,551, Cl. 424-248.540.
Pasco, Wayne D.; Klug, Frederic J.; and Borom, Marcus P., to General Electric Company. Apparatus for firing low density graphite/alumina cores. 4,219,328, Cl. 432-253.000.
Pasqualucci, Carmine: *See—*
Marsili, Leonardo; Rossetti, Vittorio; and Pasqualucci, Carmine, 4,219,478, Cl. 260-239.30P.
Pasquini, Sandro, to Matisa Materiel Industriel S.A. Apparatus for tamping or packing the bed of railway tracks. 4,218,978, Cl. 104-12.000.
Patel, Dahyabhai M.: *See—*
Zalipsky, Jerome J.; and Patel, Dahyabhai M., 4,219,474, Cl. 260-156.000.
Patel, Rasik M. Safety devices. 4,219,819, Cl. 343-18.00B.
Patience, Donald; and Karami, Hamzeh, to Colgate-Palmolive Company. Absorbent article. 4,219,024, Cl. 128-287.000.
Patmore, Thomas R.: *See—*
Jaeschke, Harold R.; Patmore, Thomas R.; and Webinger, George, 4,219,145, Cl. 229-8.000.
Patton, Doyle W.: *See—*
Skaggs, Boyd T.; and Patton, Doyle W., 4,219,146, Cl. 229-15.000.
Paul, Gerhard: *See—*
Fischer, Adolf, deceased; Rohr, Wolfgang; and Paul, Gerhard, 4,219,493, Cl. 260-456.00A.
Pawlus, Arthur L.: *See—*
Koch, David A.; Moore, Michael G.; and Pawlus, Arthur L., 4,219,706, Cl. 200-4.000.
Pecorini, Marcello: *See—*
Careglio, Giuseppe; Restori, Ettore; and Pecorini, Marcello, 4,219,071, Cl. 165-23.000.
Pedersen, Hakon S., to A/S Bergens Mekaniske Verksteder. Hydraulic system for operation of two winches. 4,218,883, Cl. 60-427.000.
Pedersen, Jorgen W.; and Lausen, Thorkild, to Nutridan Engineering A/S. Process for the physical discoloration of animal blood. 4,219,577, Cl. 426-264.000.
Peditto, Andrea: *See—*
Petrillo, Vincenzo; and Peditto, Andrea, 4,219,686, Cl. 585-24.000.
Peickert, Robert C.: *See—*
Peickert, Stanley A.; and Peickert, Robert C., 4,219,007, Cl. 126-279.000.
Peickert, Stanley A.; and Peickert, Robert C. Combination hearth and firewall. 4,219,007, Cl. 126-279.000.
Pelc, John C.: *See—*
Kamen, Melvin E.; Bernfeld, Morris; and Pelc, John C., 4,219,721, Cl. 219-121.0LM.
Pende, Berislav; and Neri, Paolo, to Istituto Sieroterapico & Vaccinogeno Toscano 'SCLAVO' S.p.A. Method for the preparation of chorionic human somatomammotropin. 4,219,467, Cl. 260-112.00R.
Pennsylvania Scale Company: *See—*
Gard, Eric A.; and Bryan, James S., 4,219,089, Cl. 177-165.000.
Pennwalt Corporation: *See—*
MacLeay, Ronald E.; and Sheppard, Chester S., 4,219,476, Cl. 260-192.000.
Sanchez, Jose; Kamath, Vasanth R.; and Halas, James C., 4,219,676, Cl. 568-566.000.
Venkatram, Ramdas; Kamath, Vasanth R.; and Smith, Chester J., 4,219,675, Cl. 568-563.000.
Performance Counts, Inc.: *See—*
Kjesbo, Craig R., 4,219,206, Cl. 280-817.000.
Perratt, Charles I.: *See—*
Pinkney, Harold F. L.; and Perratt, Charles I., 4,219,847, Cl. 358-126.000.
Peterman, Robert J., to Koehring Company. High lift hydraulic system for an excavator. 4,218,837, Cl. 37-103.000.
Peters, Edward J.: *See—*
Babinsky, Andrew D.; Hora, Charles J.; Peters, Edward J.; and Zeman, Wayne P., 4,219,394, Cl. 204-98.000.
Peterson, Harley G., to Joy Manufacturing Company. Filter bag retaining system with removable thimble extension. 4,219,343, Cl. 55-378.000.
Peterson, Theodore J.: *See—*
Stragier, Marcel G.; Peterson, Theodore J.; Bingman, John W.; and Barker, Julius A., 4,219,298, Cl. 414-409.000.
Petrillo, Vincenzo; and Peditto, Andrea, to Liquichimica Italiana S.p.A. Process for the preparation of alkylbenzenes. 4,219,686, Cl. 585-24.000.
Petry, Stanton H., to Cory Food Services, Inc. Beverage brewer. 4,218,965, Cl. 99-283.000.
Petry, Stanton H., to Cory Food Services, Inc. Beverage brewer housing structure. 4,218,966, Cl. 99-295.000.
Pfizer Inc.: *See—*
Barnish, Ian T.; Cross, Peter E.; Danilewicz, John C.; Morville, Malcolm; and Page, Michael G., 4,219,566, Cl. 424-317.000.
Kuhla, Donald E.; and Plattner, Jacob J., 4,219,483, Cl. 260-345.70P.
Torres, Anibal, 4,219,580, Cl. 426-549.000.
Pfundstein, Wolfgang: *See—*
Katz, Klaus; Abt, Reinhold; Bordovsky, Jaromir; Pfundstein, Wolfgang; and Wingert, Georg, 4,218,958, Cl. 91-434.000.
Pharmacaps, Inc.: *See—*
Borkan, Florence, 4,219,116, Cl. 206-1.500.
Phelps, Paul S. Spring locked disassembly folding knife. 4,218,819, Cl. 30-157.000.
Philip Morris Incorporated: *See—*
Rainer, Norman B.; and Full, Donald A., 4,219,031, Cl. 131-10.500.
Philipp, Herbert R., to General Electric Company. Method of improving varistor upturn characteristics. 4,219,518, Cl. 264-66.000.
Phillips Petroleum Company: *See—*
Finch, Jack N., 4,219,445, Cl. 252-443.000.
Murtha, Timothy P., 4,219,689, Cl. 585-425.000.
Newton, Richard C., 4,218,869, Cl. 57-245.000.
Stapp, Paul R., 4,219,682, Cl. 568-879.000.
Wu, Yulin, 4,219,683, Cl. 568-906.000.
Philmon & Hart Laboratories, Incorporated: *See—*
Growe, Glen H.; and Williams, Robert L., 4,218,780, Cl. 2-199.000.
Physics International Company: *See—*
O'Neill, Cormac G.; and Foster, Charles E., 4,219,755, Cl. 310-348.000.
Piampiano, Carl. Means and method improving taste of saccharine sweetened food products. 4,219,579, Cl. 426-548.000.
Pietzka, Gerhard; Tillmanns, Harald; and Romey, Ingo, to Sigri Elektrographit GmbH; and Bergwerksverband GmbH. Method of continuously producing coke. 4,219,405, Cl. 208-50.000.
Pigerol, Charles: *See—*
Bazile, Yves; de Cointet de Fillain, Paul; and Pigerol, Charles, 4,219,482, Cl. 549-68.00A.
Pillai, Devamanohari: *See—*
Dea, Iain C. M.; and Pillai, Devamanohari, 4,219,581, Cl. 426-565.000.
Pillsbury Company, The: *See—*
Borek, James R., 4,219,573, Cl. 426-107.000.
Pilon, Jacques. Water treatment process. 4,219,418, Cl. 210-50.000.
Pinkney, Harold F. L.; and Perratt, Charles I., to Canadian Patents & Development Limited. Method and apparatus of determining the center of area or centroid of a geometrical area of unspecified shape lying in a larger x-y scan field. 4,219,847, Cl. 358-126.000.
Pioneer Electronic Corporation: *See—*
Magata, Yoshihiro; Yoshida, Kobun; and Kato, Itsuo, 4,219,852, Cl. 360-90.000.
Pippert, Frederick B., to Utex Industries, Inc. Anti-extrusion seals and packings. 4,219,204, Cl. 277-188.00A.
Pitney Bowes Inc.: *See—*
Burke, James E., 4,219,192, Cl. 271-160.000.
Rastorguyeff, Andrew W., 4,219,191, Cl. 271-3.100.
Pittman, Edgar H., to Milliken Research Corporation. Slubbed open end spun yarn. 4,218,868, Cl. 57-209.000.
Plati, John T.: *See—*
Berger, Leo; Plati, John T.; and Ziering, Albert, 4,219,657, Cl. 549-43.000.
Plattner, Jacob J.; Stroupe, Stephen D.; and Voss, Houston F., to Abbott Laboratories. Chromogenic substrates. 4,219,497, Cl. 260-501.140.
Plattner, Jacob J.: *See—*
Kuhla, Donald E.; and Plattner, Jacob J., 4,219,483, Cl. 260-345.70P.
Platz, Rolf; Weitz, Hans-Martin; and Hartig, Juergen, to BASF Aktiengesellschaft. Preparation of carboxylic acid esters of vicinal glycols. 4,219,666, Cl. 560-246.000.
Plessey Handel und Investments AG: *See—*
Cooper, Paul V.; and Marsh, Anthony, 4,219,882, Cl. 365-2.000.
Plimmer, Jack R.: *See—*
Klun, Jerome A.; Plimmer, Jack R.; Bierl-Leonhardt, Barbara A.; and Sparks, Alton N., 4,219,542, Cl. 424-84.000.

Poijarvi, Jaakko T. I.: *See*—
Rastas, Jussi K.; Fugleberg, Sigmund P.; Heimala, Seppo O.; Hultholm, Sitg-Erik; and Poijarvi, Jaakko T. I., 4,219,354, Cl. 75-101.00R.
Pokkinen, Martti: *See*—
Surakka, Jorma; Pokkinen, Martti; Makkonen, Jorma; Valkama, Erkki; Karkkainen, Viljo; Rabina, Pekka; and Matula, Jouni, 4,219,166, Cl. 241-246.000.
Polak's Frutal Works B.V.: *See*—
Lenselink, Willem; and Kettenes, Dirk K., 4,219,449, Cl. 252-522.00R.
Polaroid Corporation: *See*—
Idelson, Elbert M.; Raphael, Thomas; and Schlein, Herbert N., 4,219,599, Cl. 428-195.000.
Polivoda, Evgeny O.: *See*—
Gusev, Valery F.; Ivanov, Gennady N.; Kontarev, Vladimir Y.; Krengel, Genrikh I.; Polivoda, Evgeny O.; Skvortsov, Alexandr N.; Schetinin, Jury I.; Kremlev, Vyacheslav Y.; Shagivaleev, Mansur Z.; and Yarmukhametov, Azat U., 4,219,874, Cl. 364-200.000.
Polley, Richard B., to ACF Industries, Incorporated. Telescoping eduction pipe assembly with elastomeric boot. 4,219,047, Cl. 137-590.000.
Polytop Corporation: *See*—
Hazard, Robert E., 4,219,138, Cl. 222-534.000.
Ponder, Jonathan Z., to Gould Inc. Hybrid dual voltage transmission system. 4,219,742, Cl. 307-147.000.
Pope, John A.; Rennison, Stuart C.; and Stacey, Ronald J., to Imperial Chemical Industries Limited. Recording materials for vesicular imaging. 4,219,616, Cl. 430-152.000.
Porosoff, Harold, to American Cyanamid Company. Melt-spinning acrylonitrile polymer fiber from low molecular weight polymers. 4,219,523, Cl. 264-206.000.
Portescap: *See*—
Heyraud, Marc; and Martin, Andre, 4,219,825, Cl. 346-101.000.
Post Office, The: *See*—
Murrell, Donald L., 4,219,610, Cl. 428-469.000.
Powell, James E., to Shell Oil Company. Cyclopropanecarboxylate pesticides. 4,219,563, Cl. 424-304.000.
Powers Manufacturing, Inc.: *See*—
Comfort, Gary, 4,218,913, Cl. 73-45.200.
Powers, Robert B. Jigsaw puzzle game. 4,219,194, Cl. 273-54.00B.
Prab Conveyors, Inc.: *See*—
Herder, Gary A., 4,219,410, Cl. 209-143.000.
Pracht, Hans J.: *See*—
Biard, Daniel; Lichtfus, Gerard J.; Pracht, Hans J.; and Kleeman, Wolfgang, 4,219,435, Cl. 252-90.000.
Gromer, Jurgen W. K.; and Pracht, Hans J., 4,219,436, Cl. 252-135.000.
Pradel, Maurice: *See*—
Guidez, Joel; and Pradel, Maurice, 4,219,385, Cl. 176-40.000.
Prefco Products, Inc.: *See*—
McCabe, Francis J., 4,219,185, Cl. 251-308.000.
Press, Jeffery B.; and Safir, Sidney R., to American Cyanamid Company. 3,4-Disubstituted thiophenes. 4,219,656, Cl. 549-64.000.
Pressler, Wilfried: *See*—
Roscher, Gunter; and Pressler, Wilfried, 4,219,500, Cl. 260-561.00R.
Price, William M.; and Nott, Alan J., to Anglo-American Clays Corporation. Magnetic separation of minerals utilizing magnetic particulates. 4,219,408, Cl. 209-5.000.
Probsteder, Josef. Furnace especially well suited for burning straw, wood waste materials and the like. 4,218,980, Cl. 110-196.000.
Procter & Gamble Company, The: *See*—
Biard, Daniel; Lichtfus, Gerard J.; Pracht, Hans J.; and Kleeman, Wolfgang, 4,219,435, Cl. 252-90.000.
Drobish, James L.; and Gougeon, Thomas W., 4,219,016, Cl. 128-130.000.
Gromer, Jurgen W. K.; and Pracht, Hans J., 4,219,436, Cl. 252-135.000.
Reller, Herbert H., 4,219,548, Cl. 424-234.000.
Prueter, E. D.: *See*—
West, Walter H.; and Prueter, E. D., 4,219,046, Cl. 137-375.000.
Przygocki, Witold C., to ACME Manufacturing Company. Planetary grinder and polisher. 4,218,800, Cl. 15-88.000.
Puckett, Stanley M. Portable spittoon. 4,218,787, Cl. 4-258.000.
Puropore Inc.: *See*—
Kesting, Robert E., 4,219,517, Cl. 264-49.000.
Quad/Eight Electronics: *See*—
Nichols, Charles R., 4,219,880, Cl. 364-718.000.
Quaker Oats Company, The: *See*—
Dunlop, Andrew P., 4,219,485, Cl. 260-347.700.
Dunlop, Andrew P., 4,219,486, Cl. 260-347.700.
Dunlop, Andrew P., 4,219,487, Cl. 260-347.700.
Queck, Robert: *See*—
Hartlapp, Gerhard; Kowalski, Werner; Queck, Robert; and Dahmen, Theo, 4,219,533, Cl. 422-200.000.
Quinan, James R., to Albany International Corp. Bottom pouring crucible. 4,219,139, Cl. 222-590.000.
Qume Corporation: *See*—
Lin, Frank W., 4,219,766, Cl. 318-594.000.
Rabina, Pekka: *See*—
Surakka, Jorma; Pokkinen, Martti; Makkonen, Jorma; Valkama, Erkki; Karkkainen, Viljo; Rabina, Pekka; and Matula, Jouni, 4,219,166, Cl. 241-246.000.
Rademacher, Frank. Diamond lapping compound stick and holder. 4,218,852, Cl. 51-211.00R.
Raduchel, Bernd: *See*—
Vorbruggen, Helmut; Skuballa, Werner; Raduchel, Bernd; Losert, Wolfgang; Loge, Olaf; Muller, Bernd; and Mannesmann, Gerda, 4,219,479, Cl. 424-263.000.
Rahn, Armin: *See*—
Hoting, Johann-Peter; Rahn, Armin; and Zerver, Hermann-Jochen, 4,218,828, Cl. 33-334.000.
Rainer, Norman B.; and Full, Donald A., to Philip Morris Incorporated. Smoking product having core of fibrillar carbonized matter. 4,219,031, Cl. 131-10.500.
Rajagopalan, Parthasarathi, to Du Pont de Nemours, E. I., and Company. Cis- and trans- octahydropyridopyrrolobenzheterocycles. 4,219,550, Cl. 424-246.000.
Ramadorai, Gopalan: *See*—
Ramirez, Ernest R.; and Ramadorai, Gopalan, 4,219,416, Cl. 210-44.000.
Ramey, Chester E.; and Luzzi, John J., to Ciba-Geigy Corporation. Hindered piperidine carboxylic acids, metal salts thereof and stabilized compositions. 4,219,464, Cl. 260-45.80N.
Ramirez, Ernest R.; and Ramadorai, Gopalan, to Dravo Corporation. Process for recovering molybdenum and tungsten from mining wastewater. 4,219,416, Cl. 210-44.000.
Ramirez, Ernest R., to Dravo Corporation. Wastewater flotation utilizing streaming potential adjustment. 4,219,417, Cl. 210-44.000.
Ranco Incorporated: *See*—
Schneck, Werner, 4,219,182, Cl. 251-58.000.
Rao, V. N. Mallikarjuna: *See*—
Nielsen, Norman A.; and Rao, V. N. Mallikarjuna, 4,219,509, Cl. 568-473.000.
Raphael, Thomas: *See*—
Idelson, Elbert M.; Raphael, Thomas; and Schlein, Herbert N., 4,219,599, Cl. 428-195.000.
Rasp, Christian: *See*—
Becker, Robert; Grolig, Johann; Rasp, Christian; and Scharfe, Gerhard, 4,219,661, Cl. 560-24.000.
Rastas, Jussi K.; Fugleberg, Sigmund P.; Heimala, Seppo O.; Hultholm, Sitg-Erik; and Poijarvi, Jaakko T. I., to Outokumpu Oy. Hydrometallurgical process for the treatment of oxides and ferrites which contain iron and other metals. 4,219,354, Cl. 75-101.00R.
Rastorguyeff, Andrew W., to Pitney Bowes Inc. Document feeding apparatus. 4,219,191, Cl. 271-3.100.
Ratliff, Charles R.: *See*—
Reid, Lee R.; and Ratliff, Charles R., 4,219,771, Cl. 324-158.00P.
Raychem Corporation: *See*—
Cammack, Travers K., II; and Nyberg, David D., 4,219,607, Cl. 428-411.000.
Raynes, Edward P., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Temperature compensated liquid crystal devices. 4,219,255, Cl. 350-346.000.
Raytheon Company: *See*—
Collins, John D., 4,219,813, Cl. 343-7.700.
RCA Corporation: *See*—
Bloom, Allen; Burke, William J.; and Ross, Daniel L., 4,219,826, Cl. 346-135.100.
Johnson, Henry C., 4,219,814, Cl. 343-9.00R.
Schade, Otto H., Jr., 4,219,787, Cl. 331-111.000.
Spong, Fred W., 4,219,848, Cl. 358-128.500.
Ream, Donald F., to United States of America, Navy. Underwater electric current and alternating magnetic field detector. 4,218,975, Cl. 102-18.00M.
Rech, Werner; Welsch, Wolfgang; and Zimlich, Josef, to Heimann GmbH. Gas discharge lamp. 4,219,757, Cl. 313-220.000.
Reed, Ewell R. Fluid intake and exhaust assemblies for positive displacement apparatus. 4,218,994, Cl. 123-47.00R.
Regency Electronics, Inc.: *See*—
Selim, Harold N., 4,219,821, Cl. 343-113.00R.
Reichenbach, Jerry D.: *See*—
Christiansen, Keith W.; and Reichenbach, Jerry D., 4,219,205, Cl. 277-208.000.
Reichhold Limited: *See*—
Sudan, Krishan K.; and Berchem, Antoine, 4,219,623, Cl. 521-85.000.
Reid, Lee R.; and Ratliff, Charles R., to Texas Instruments Incorporated. Four-quadrant, multiprobe-edge sensor for semiconductor wafer probing. 4,219,771, Cl. 324-158.00P.
Reiner, Jack P., administrator: *See*—
Tabatznik, Robert A.; and Reiner, Steven H., deceased, 4,219,032, Cl. 131-170.00A.
Reiner, Steven H., deceased: *See*—
Tabatznik, Robert A.; and Reiner, Steven H., deceased, 4,219,032, Cl. 131-170.00A.
Reiss, Donald A.: *See*—
Oran, William A.; Berge, LeRoy H.; Reiss, Donald A.; and Johnson, Jerry L., 4,218,921, Cl. 73-505.000.
Reller, Herbert H., to Procter & Gamble Company, The. Topical anti-inflammatory composition. 4,219,548, Cl. 424-234.000.
Rembaum, Alan: *See*—
Yen, Shiao-Ping S.; Rembaum, Alan; and Molday, Robert S., 4,219,411, Cl. 209-213.000.
Rennison, Stuart C.: *See*—
Pope, John A.; Rennison, Stuart C.; and Stacey, Ronald J., 4,219,616, Cl. 430-152.000.

Reschke, Helmut, deceased: *See—*
Frosien, Jurgen; and Reschke, Helmut, deceased, 4,219,719, Cl. 219-121.0EM.
Reschke, Paul Reschke and Flora, administrators: *See—*
Frosien, Jurgen; and Reschke, Helmut, deceased, 4,219,719, Cl. 219-121.0EM.
Restori, Ettore: *See—*
Careglio, Giuseppe; Restori, Ettore; and Pecorini, Marcello, 4,219,071, Cl. 165-23.000.
Rettberg, Harvey C., to Singer Company, The. Housing for power tools. 4,219,749, Cl. 310-89.000.
Reul, Helmut; and Ghista, Dhanjoo N., to Dr. E. Fresenius, Chem.-Pharm. Industrie KG. Prosthetic closure element for the replacement of the mitral and tricuspid valve in the human heart. 4,218,783, Cl. 3-1.500.
Revak, Timothy T.: *See—*
Anand, Joginder N.; Revak, Timothy T.; and Tsang, Floris Y., 4,219,613, Cl. 429-104.000.
Revlon, Inc.: *See—*
Kamen, Melvin E.; Bernfeld, Morris; and Pelc, John C., 4,219,721, Cl. 219-121.0LM.
Reynolds, Perd L., to GTE Automatic Electric Laboratories Incorporated. Automatic remote operate circuit. 4,219,697, Cl. 179-2.00A.
Rhinefrank, Robert A.; and Sunday, William H., to Carando Machine Works. Single-cam actuated drum seaming mechanism. 4,218,983, Cl. 113-1.00E.
Rhinefrank, Robert A.; and Leibovich, Vladimir E., to Carando Machine Works. Drum seaming machine with column positioning and stroke limiting arrangement. 4,218,984, Cl. 113-1.00E.
Rhone-Poulenc Industries: *See—*
Biola, Georges; Komorn, Yves; and Schneider, Gerard, 4,219,389, Cl. 203-72.000.
Kuntz, Emile, 4,219,677, Cl. 568-657.000.
Rhone-Poulenc S.A.: *See—*
Julia, Marc; and Menet, Albert, 4,219,667, Cl. 560-254.000.
Ricci, Louis N.: *See—*
Maier, Alfred E.; and Ricci, Louis N., 4,219,713, Cl. 200-153.00G.
Richards, Gary. Dual-purpose diverter valve. 4,218,784, Cl. 4-543.000.
Richardson, David. Detector for multiplicity of radio wave frequencies. 4,219,777, Cl. 455-227.000.
Richardson, Edwin A.; Scheuerman, Ronald F.; and Berkshire, David C., to Shell Oil Company. Chemical process for backsurging fluid through well casing perforations. 4,219,083, Cl. 166-300.000.
Richardson-Merrell Inc.: *See—*
Edwards, Michael L., 4,219,648, Cl. 544-21.000.
Richter, Wolfdieter. Automatic guidance apparatus. 4,219,092, Cl. 180-169.000.
Rideout, Vincent L.: *See—*
Esch, Ronald P.; Folsom, Robert M.; Liu, Cheng-Yih; Rideout, Vincent L.; Soderman, Donald A.; and Wenning, G. Thomas, 4,219,834, Cl. 357-41.000.
Riebel, Hans-Jochem; and Stolzer, Claus, to Bayer Aktiengesellschaft. Preparation of O,O-diethyl-O-(1-phenyl-2-cyano-prop-1-enyl)-thionophosphoric acid ester. 4,219,511, Cl. 260-973.000.
Rieger, Franz: *See—*
Gruner, Heiko; Rieger, Franz; and Schussler, Rainer, 4,219,399, Cl. 204-195.00S.
Riemer, Bernd: *See—*
Albrecht, Wilhelm; Riemer, Bernd; and Allert, Anton, 4,218,937, Cl. 74-513.000.
Rigby, William H., Jr.: *See—*
Helser, Jerry L.; and Rigby, William H., Jr., 4,219,515, Cl. 264-37.000.
Riker Laboratories, Inc.: *See—*
Moore, George G. I., 4,219,501, Cl. 260-562.00A.
Rittenbach, Otto E., to United States of America, Army. Range-gated pulse doppler radar system. 4,219,812, Cl. 343-7.300.
Rittersdorf, Walter: *See—*
Guthlein, Werner; Wielinger, Hans; Rittersdorf, Walter; and Werner, Wolfgang, 4,219,336, Cl. 23-230.00B.
Robert Bosch GmbH: *See—*
Frister, Manfred, 4,219,798, Cl. 340-52.00F.
Gruner, Heiko; Rieger, Franz; and Schussler, Rainer, 4,219,399, Cl. 204-195.00S.
Hornung, Friedrich; and Schadlich, Fritz, 4,219,747, Cl. 310-68.00B.
Latsch, Reinhard; and Schlembach, Hans, 4,218,992, Cl. 123-263.000.
Locher, Johannes; and Domann, Helmut, 4,219,000, Cl. 123-357.000.
Zehender, Ernst, 4,219,867, Cl. 362-19.000.
Robertsson, Hans R., to Saab-Scania AB. Scoring of simulated weapons fire with sweeping fan-shaped beams. 4,218,834, Cl. 35-25.000.
Robinson, Glen P., Jr. Heat transfer system. 4,219,076, Cl. 165-104.00S.
Robinson Industries, Inc.: *See—*
Gutzwiller, Howard L., 4,219,325, Cl. 432-199.000.
Rockwell-Golde, G.m.b.H.: *See—*
Kouth, Herbert, 4,219,232, Cl. 296-223.000.
Rockwell International Corporation: *See—*
Dorsman, Adrian K., 4,219,276, Cl. 356-350.000.
Fortunko, Christopher M.; Vasile, Carmine F.; and Thompson, Robert B., 4,218,924, Cl. 73-642.000.
Henry, Rodney D., 4,219,275, Cl. 356-350.000.
Mansur, George F., Jr., 4,219,818, Cl. 343-17.10R.
Rodeck, Hans-Jurgen. Close-up device for photographic viewfinder cameras. 4,219,264, Cl. 354-162.000.
Rodgers, William C., to Hoover Universal, Inc. Chair seat back tilt-adjusting mechanism. 4,219,233, Cl. 297-300.000.
Rogatkin, Alexandr A.: *See—*
Tokar, Vladimir A.; Zubik, Maria I.; Baklanov, Grigory M.; Matygin, Nikolai F.; Ustinov, Valentin S.; Kolesnikov, Anatoly V.; Gashenko, Stanislav I.; Rogatkin, Alexandr A.; Khlopkov, Leonid P.; Mikheeva, Vera I.; Lekalova, Lidia I.; Drepin, Nikolai F.; Feofanov, Lev P.; Khodotova, Nina E.; Shevchenko, Ivan I.; Telina, Larisa A.; Garmash, Vladimir I.; and Frantsevich, Andrei M., 4,219,363, Cl. 106-100.000.
Rogel, Albert P.; and Scalese, Joseph J. Automatic eddy current surface probe for fastener holes. 4,219,774, Cl. 324-262.000.
Rogers, Peter R.: *See—*
Allen, David H.; Rogers, Peter R.; and Whitney, John, 4,218,933, Cl. 74-422.000.
Rohling, Holmer: *See—*
Lubitzsch, Wolfgang; Schinkmann, Manfred; and Rohling, Holmer, 4,219,038, Cl. 137-7.000.
Rohm and Haas Company: *See—*
Bayer, Horst O.; Swithenbank, Colin; and Yih, Roy Y., 4,219,352, Cl. 71-105.000.
Rohr, Wolfgang: *See—*
Fischer, Adolf, deceased; Rohr, Wolfgang; and Paul, Gerhard, 4,219,493, Cl. 260-456.00A.
Fischer, Adolf, deceased; Hansen, Hanspeter; Rohr, Wolfgang; and Hamprecht, Gerhard, 4,219,494, Cl. 260-456.00A.
Rohringer, Peter, to CIBA-GEIGY Corporation. Process for flameproofing synthetic fibre material and product. 4,219,605, Cl. 428-361.000.
Rokutanda, Takashi: *See—*
Kobayashi, Yoshiuki; and Rokutanda, Takashi, 4,219,883, Cl. 365-189.000.
Rolfes, Marlan J.: *See—*
Demorest, Donald W.; and Rolfes, Marlan J., 4,218,934, Cl. 74-473.00R.
Rollei-Werke Franke & Heidecke: *See—*
Waaske, Heinz, 4,219,265, Cl. 354-187.000.
Roman, Charles A., to L. E. Carpenter & Company, Inc. Flexible acoustical wall covering, method of making same, and wall panel employing same. 4,219,376, Cl. 156-209.000.
Roman, Steven A., to Shell Oil Company. 3-(Hydrocarbylthiomethyl)-2,2-dimethylcyclopropanecarboxylate pesticides. 4,219,562, Cl. 260-304.000.
Roman, Steven A., to Shell Oil Company. Oxyimino-substituted cyclopropanecarboxylate pesticides. 4,219,565, Cl. 424-305.000.
Roman, Steven A., to Shell Oil Company. 6,6-Dimethyl-3-thiabicyclo[3.1.0]hexan-2-one. 4,219,658, Cl. 549-52.000.
Romey, Ingo: *See—*
Pietzka, Gerhard; Tillmanns, Harald; and Romey, Ingo, 4,219,405, Cl. 208-50.000.
Romine, Edward L., to Litton Systems, Inc. Power connector. 4,219,251, Cl. 339-17.00C.
Roscher, Gunter; and Pressler, Wilfried, to Hoechst Aktiengesellschaft. Process for the manufacture of N,N'-diacetylethylene diamine. 4,219,500, Cl. 260-561.00R.
Rosenkranz, Hans J.: *See—*
Wolfers, Heinrich; and Rosenkranz, Hans J., 4,219,626, Cl. 525-23.000.
Wolfers, Heinrich; Walter, Oskar; Rudolph, Hans; and Rosenkranz, Hans J., 4,219,674, Cl. 568-559.000.
Rosner, Ortwin; and Strauss, Karl-Peter. Photographic camera with a means for coordinating and indicating depth of field focusing and objective setting values. 4,219,261, Cl. 354-23.00D.
Ross, Bernd. Screenable contact structure and method for semiconductor devices. 4,219,448, Cl. 252-500.000.
Ross, Daniel L.: *See—*
Bloom, Allen; Burke, William J.; and Ross, Daniel L., 4,219,826, Cl. 346-135.100.
Ross, Franklin. Wind power generator. 4,219,309, Cl. 416-80.000.
Rossetti, Vittorio: *See—*
Marsili, Leonardo; Rossetti, Vittorio; and Pasqualucci, Carmine, 4,219,478, Cl. 260-239.30P.
Rossi, John P., to CBS Inc. Horizontal blanking corrector for television signals. 4,219,838, Cl. 358-21.00R.
Rothman, Michael L. Alarm. 4,218,875, Cl. 368-73.000.
Roudner, Leonard A.: *See—*
Grossman, Jack; and Roudner, Leonard A., 4,219,029, Cl. 128-774.000.
Roulston, John F.; and Weeden, George, to Ferranti Limited. Gain controlled amplifier circuits. 4,219,780, Cl. 330-52.000.
Roulstone, Geoffrey A.: *See—*
Jackson, Stephen; and Roulstone, Geoffrey A., 4,219,413, Cl. 210-25.000.
Routh, Claude C.; Geren, Keith E.; Huisveld, Peter, Jr.; and Papineau, Milton D., to United States of America, Navy. Sonar target simulator. 4,219,885, Cl. 367-1.000.
RPC Corporation: *See—*
Sturgill, James D., 4,219,094, Cl. 180-236.000.
RTE Corporation: *See—*
Estes, Michael J., 4,219,859, Cl. 361-93.000.
Rubens, Roger W., to National Starch and Chemical Corp. Process for preparing cross-linked starches using STMP. 4,219,646, Cl. 536-109.000.
Ruberoidwerke Aktiengesellschaft: *See—*
Thun, Dieter, 4,219,603, Cl. 428-246.000.

Rubey, Ulyss R., to Detectors, Inc. Shockswitch. 4,219,708, Cl. 200-61.470.

Rucman, Rudolf; and Djordjevic, Nebojsa, to LEK, Tovarna farmacevtskik in kemicnik izdelkov, N.sol.o. 2-Bromoergosine and pharmacologically compatible acid addition salts thereof as well as their use for the treatment of arterial hypertension and or heart arrythmias. 4,219,555, Cl. 424-250.000.

Rudd, Wallace C.; and Udall, Humfrey N., to Thermatool Corp. Methods and apparatus for heating metal parts with magnetically driven travelling electric arc. 4,219,722, Cl. 219-123.000.

Rudmann, Arthur A., to United States of America, National Aeronautics and Space Administration. Device for coupling a first vehicle to a second vehicle. 4,219,171, Cl. 244-161.000.

Rudolph, Hans: *See—*
Wolfers, Heinrich; Walter, Oskar; Rudolph, Hans; and Rosenkranz, Hans J., 4,219,674, Cl. 568-559.000.

Rue, Charles V., to Norton Company. High speed rotatable abrasive body and mounting. 4,218,851, Cl. 51-168.000.

Ruhl, Robert C., to Kennecott Copper Corporation. Rolling mill bearing assembly. 4,218,907, Cl. 72-241.000.

Rulf, Donald C.; and Gurnee, Edward F., to Dow Chemical Company, The. Polymerization process. 4,219,630, Cl. 525-243.000.

Runck, Alan H.; Armstrong, Douglas; and Hutchisson, James T., to Coulter Electronics, Inc. Multiple analysis hematology reference control reagent and method of making the same. 4,219,440, Cl. 252-408.000.

Runyon, Robert C., to Chemet Research, Inc. Flexible, self-supporting blade for cutting electronic crystals and substrates or the like. 4,219,004, Cl. 125-15.000.

Russell, James T., to Jacobs, Eli S. Record playback apparatus for optical data records. 4,219,704, Cl. 179-100.30B.

Rygg, Inge H., to Biocoating Anpartsselskab. Heart valve prosthesis and method for the production thereof. 4,218,782, Cl. 3-1.500.

Rysti, Alpo. Method and apparatus for handling both green and dried timber lengths. 4,219,120, Cl. 209-521.000.

S.A.R.L. dite: F.M.C. Fabrications Metallique de Cizely: *See—*
Ducresot, Pierre; and Archer, Catherine, 4,219,102, Cl. 182-220.000.

S.K.M.: *See—*
Binoche, Michel, 4,219,157, Cl. 239-296.000.

S. & W. Framing Supplies, Inc.: *See—*
Duggins, Richard W., 4,219,061, Cl. 144-217.000.

Saab-Scania AB: *See—*
Robertsson, Hans R., 4,218,834, Cl. 35-25.000.

Sabourin, Edward T.: *See—*
Onopchenko, Anatoli; Sabourin, Edward T.; and Selwitz, Charles M., 4,219,679, Cl. 568-705.000.

Sach, George S.: *See—*
Durant, Graham J.; Ganellin, Charon R.; and Sach, George S., 4,219,553, Cl. 424-250.000.

Sacks, Bernard. Acoustic reproduction transducer enclosure. 4,219,099, Cl. 181-153.000.

Sado, Ichiro; Saito, Seiji; and Matsuyama, Shigeru, to Canon Kabushiki Kaisha. Numerical and non-numerical display system for a small calculator. 4,219,808, Cl. 340-756.000.

Sadomov, Jury B.: *See—*
Vladimirov, Evgeny E.; Korchagin, Vladimir G.; Sadomov, Jury B.; and Khokhlov, Lev M., 4,219,877, Cl. 364-554.000.

Saeki, Jiro, to Tomy Kogyo Co. Inc. Coupler for toy and model railway cars. 4,219,123, Cl. 213-75.0TC.

Saeki, Keiso: *See—*
Kakimi, Fujio; Hoshi, Yoshiyuki; and Saeki, Keiso, 4,219,604, Cl. 428-307.000.

Safir, Sidney R.: *See—*
Press, Jeffery B.; and Safir, Sidney R., 4,219,656, Cl. 549-64.000.

Sagae, Makoto: *See—*
Ueno, Masayuki; Sagae, Makoto; and Sano, Fumiaki, 4,218,918, Cl. 73-421.50R.

Sagami Chemical Research Center: *See—*
Fujisawa, Tamotsu; Sakai, Kunikazu; and Kurebayashi, Akira, 4,219,659, Cl. 549-79.000.

Sagara, Makoto: *See—*
Asakura, Kouichi; and Sagara, Makoto, 4,218,825, Cl. 33-174.00Q.

Saggese, Michael F.; Owens, Fred V.; and Fila, Barbara, to Tenneco Chemicals, Inc. Polymers of vinyl chloride having low vinyl chloride monomer content, and method of making same. 4,219,640, Cl. 528-501.000.

Saikawa, Isamu; Takano, Shuntaro; Yoshida, Chosaku; Takashima, Okuta; Momonoi, Kaishu; Kuroda, Seietsu; Komatsu, Miwako; Yasuda, Takashi; and Kodama, Yutaka, to Toyama Chemical Company, Limited. Novel penicillins and cephalosporins and process for producing same. 4,219,554, Cl. 424-250.000.

St. Laurent, Wilfred H., Jr., to Bellofram Corporation. Pneumatic relay. 4,219,042, Cl. 137-85.000.

Saito, Seiji: *See—*
Sado, Ichiro; Saito, Seiji; and Matsuyama, Shigeru, 4,219,808, Cl. 340-756.000.

Sakaguchi, Yukinobu; Sakano, Tomiaki; and Hirata, Junichi, to Matsushita Electric Industrial Co., Ltd. Electrical machine stator and manufacturing method therefor. 4,219,748, Cl. 310-71.000.

Sakai, Kunikazu: *See—*
Fujisawa, Tamotsu; Sakai, Kunikazu; and Kurebayashi, Akira, 4,219,659, Cl. 549-79.000.

Sakai, Tadao, to Fuji Photo Film Co., Ltd. Color intensification process for sound images. 4,219,615, Cl. 430-140.000.

Sakai, Yasuo; Nagashima, Kazuo; and Goto, Harukatsu, to Toshiba Kikai Kabushiki Kaisha. Cambering devices of roll grinding lathes. 4,218,850, Cl. 51-49.000.

Sakano, Tomiaki: *See—*
Sakaguchi, Yukinobu; Sakano, Tomiaki; and Hirata, Junichi, 4,219,748, Cl. 310-71.000.

Sakurai, Hisaya; Moriguchi, Kisoo; and Katayama, Yoshihiko, to Asahi Kasei Kogyo Kabushiki Kaisha. Inorganic filler-incorporated ethylene polymer film. 4,219,453, Cl. 260-23.00H.

Saladmaster, Inc.: *See—*
Bergan, Norman A.; Walker, Robert G.; and Van Weelden, Marvin, 4,219,165, Cl. 241-93.000.

Salvatore, Arthur C., Jr.: *See—*
Talmadge, Michael J.; Salvatore, Arthur C., Jr.; and Garafalo, Anthony, 4,219,073, Cl. 165-39.000.

Samejima, Toshihide: *See—*
Moritani, Nakanobu; Oda, Hajime; and Samejima, Toshihide, 4,218,871, Cl. 368-109.000.

Samibem, S.A.: *See—*
Kaetzel, Pierre, 4,218,867, Cl. 56-370.000.

Sams, Michael L. Working bin. 4,218,859, Cl. 52-194.000.

San-O Industrial Corporation: *See—*
Arikawa, Hiroo; Maruo, Masaya; and Yuza, Yasutada, 4,219,794, Cl. 337-292.000.

Sanchez, Edward J. Composition roof shingle remover. 4,219,238, Cl. 299-39.000.

Sanchez, Jose; Kamath, Vasanth R.; and Halas, James C., to Pennwalt Corporation. Unsymmetrical diperoxides and processes of use in polymerizing unsaturated monomers. 4,219,676, Cl. 568-566.000.

Sander, Bruno: *See—*
Sinn, Richard; Nagel, Otto; Sander, Bruno; Bonitz, Eckhard; Scherling, Kurt; Zettler, Hans D.; Stoehr, Dieter; and Berbaer, Heinz, 4,219,512, Cl. 264-11.000.

Sandoz, Inc.: *See—*
Houlihan, William J., 4,219,560, Cl. 424-267.000.

Sandoz Ltd.: *See—*
Hauth, Hartmut, 4,219,556, Cl. 424-261.000.

Sandridge, Jack R.: *See—*
Hagrman, Raymond L.; Sandridge, Jack R.; and Soete, Paul D., 4,218,879, Cl. 60-39.28R.

Sankyo Company Limited: *See—*
Soma, Nobuo; Morimura, Syoji; Yoshioka, Takao; and Kurumada, Tomoyuki, 4,219,465, Cl. 260-45.8NT.

Sano, Fumiaki: *See—*
Ueno, Masayuki; Sagae, Makoto; and Sano, Fumiaki, 4,218,918, Cl. 73-421.50R.

Sansing, James E.: *See—*
Parham, Thomas M., Jr.; and Sansing, James E., 4,219,348, Cl. 71-30.000.

Sanyo Electric Co., Ltd.: *See—*
Noma, Kouichi; Umeda, Tsutomu; and Ogushi, Tsuneo, 4,219,598, Cl. 428-161.000.
Takahashi, Yoshimasa, 4,219,843, Cl. 358-60.000.

Sargent Industries, Inc.: *See—*
Simon, Donald J., 4,219,311, Cl. 417-260.000.

Sarich, Tony R. Sealing member for orbital or rotary motors. 4,219,315, Cl. 418-61.00R.

Sarkozi, Miklos: *See—*
Yaroshuk, Nick; Sarkozi, Miklos; and Vaerewyck, Eugene G., 4,219,277, Cl. 356-431.000.

Sartorius GmbH: *See—*
Knothe, Erich; and Lorenz, Gerhard, 4,219,422, Cl. 210-137.000.

Sasaki, Yukihiko: *See—*
Takemoto, Shiro G.; and Sasaki, Yukihiko, 4,219,596, Cl. 428-41.000.

Sato, Haruhiko; Shibagaki, Masao; and Ueda, Tadakazu, to Toyo Kogyo Co., Ltd. Ignition means for rotary piston engines. 4,219,003, Cl. 123-210.000.

Sato, Kozo; and Kato, Hajime, to Fuji Photo Film Co., Ltd. Developers for pressure-sensitive recording and developing sheets containing them. 4,219,219, Cl. 282-27.500.

Sato, Kunihiko; Urata, Tetsuro; Asamoto, Tetsuhiro; Asakawa, Kobun; Uebayashi, Takeo; and Taguchi, Haruo, to Mitsubishi Denki Kabushiki Kaisha; and Nippon Kokan Kabushiki Kaisha. Process and apparatus for electrical discharge machining of cylindrical work. 4,219,718, Cl. 219-69.00M.

Saucy, Gabriel: *See—*
Olson, Gary L.; and Saucy, Gabriel, 4,219,506, Cl. 568-496.000.

Sauers, Leon P. Trailer connection means. 4,219,211, Cl. 280-425.00A.

Saunders, Francis R.; and McLaughlin, Richard L., to Amfac Foods, Inc. Potato segment and process for preparing frozen french fried potatoes suitable for microwave reheating. 4,219,575, Cl. 426-242.000.

Savini, Charles, to Exxon Research & Engineering Co. Improving odor of isopropanol. 4,219,685, Cl. 568-917.000.

Sawada, Hiroji; and Igawa, Tatsuo, to Hitachi, Ltd.; and Nissan Motor Company, Limited. Distributor with coated alkaline earth oxide electrode. 4,219,707, Cl. 200-19.00R.

Sawyer, Thomas C. Method for repairing damaged bleeder valve apertures. 4,218,811, Cl. 29-157.10R.

Sbaschnigg, Johann: *See—*
Tutschek, Ernst; and Sbaschnigg, Johann, 4,218,970, Cl. 100-153.000.

Sbicca, Peter J. Method of making footwear. 4,218,797, Cl. 12-142.0EV.

Scalese, Joseph J.: *See—*
Rogel, Albert P.; and Scalese, Joseph J., 4,219,774, Cl. 324-262.000.

Scarbro, William D., to Chrysler Corporation. Steering column mounted control stalk motion translation assembly for operating switches. 4,219,709, Cl. 200-61.540.

Schade, Otto H., Jr., to RCA Corporation. Relaxation oscillator not restricted by FET threshold. 4,219,787, Cl. 331-111.000.

Schadlich, Fritz: *See—*
Hornung, Friedrich; and Schadlich, Fritz, 4,219,747, Cl. 310-68.00B.

Schaefer, Deane R. Guard opening gauge. 4,218,824, Cl. 33-169.00B.

Schafer, Richard A., to Deere & Company. Tractor implement hitch. 4,219,212, Cl. 280-460.00A.

Scharf, Gerson: *See—*
Weiss, Gerald; Scharf, Gerson; Guido, Anthony A.; and Lazardwitz, Benjamin, 4,219,891, Cl. 455-1.000.

Scharfe, Gerhard: *See—*
Becker, Robert; Grolig, Johann; Rasp, Christian; and Scharfe, Gerhard, 4,219,661, Cl. 560-24.000.

Scheer, Martin: *See—*
Haberkorn, Axel; Scheer, Martin; and Stoltefuss, Jurgen, 4,219,552, Cl. 424-249.000.

Schefold, Manfred: *See—*
Cramer, Heinz; Handel, Hubert; Schefold, Manfred; Schmitt, Hermann; and Schoening, Josef, 4,219,384, Cl. 176-36.00C.

Schenkel, Albert; and Leuenberger, Urs, to Siemens-Albis Aktiengesellschaft. Method of and apparatus for angular measurement in target tracking radar systems. 4,219,816, Cl. 343-16.00M.

Scheppele, Lyle W., to Toledo Stamping & Manufacturing Company. Apparatus for metering particulate material. 4,219,132, Cl. 222-16.000.

Schering Aktiengesellschaft: *See—*
Seidelmann, Dieter; Schmiechen, Ralph; Paschelke, Gert; and Muller, Bernd, 4,219,551, Cl. 424-248.540.
Vorbruggen, Helmut; Skuballa, Werner; Raduchel, Bernd; Losert, Wolfgang; Loge, Olaf; Muller, Bernd; and Mannesmann, Gerda, 4,219,479, Cl. 424-263.000.

Scherling, Kurt: *See—*
Sinn, Richard; Nagel, Otto; Sander, Bruno; Bonitz, Eckhard; Scherling, Kurt; Zettler, Hans D.; Stoehr, Dieter; and Berbner, Heinz, 4,219,512, Cl. 264-11.000.

Schetinin, Jury I.: *See—*
Gusev, Valery F.; Ivanov, Gennady N.; Kontarev, Vladimir Y.; Krengel, Genrikh I.; Polivoda, Evgeny O.; Skvortsov, Alexandr N.; Schetinin, Jury I.; Kremlev, Vyacheslav Y.; Shagivaleev, Mansur Z.; and Yarmukhametov, Azat U., 4,219,874, Cl. 364-200.000.

Scheuerman, Ronald F.: *See—*
Richardson, Edwin A.; Scheuerman, Ronald F.; and Berkshire, David C., 4,219,083, Cl. 166-300.000.

Scheuermann, Fanny: *See—*
Zeidler, Ulrich; and Scheuermann, Fanny, 4,219,665, Cl. 560-122.000.

Schinkmann, Manfred: *See—*
Lubitzsch, Wolfgang; Schinkmann, Manfred; and Rohling, Holmer, 4,219,038, Cl. 137-7.000.

Schlein, Herbert N.: *See—*
Idelson, Elbert M.; Raphael, Thomas; and Schlein, Herbert N., 4,219,599, Cl. 428-195.000.

Schlembach, Hans: *See—*
Latsch, Reinhard; and Schlembach, Hans, 4,218,992, Cl. 123-263.000.

Schlotterer, Willy: *See—*
Hoffmann, Friedrich; Grafe, Werner; Deiss, Siegfried; and Schlotterer, Willy, 4,219,292, Cl. 407-63.000.

Schlumberger Technology Corporation: *See—*
Trouiller, Jean-Claude, 4,219,095, Cl. 181-104.000.

Schluter, Gert; and Schuster, Wilhelm, to Battelle-Institut e. V. Polymer carrier and method for carrying out scientific, analytical and diagnostic examinations. 4,219,334, Cl. 23-230.00B.

Schmermund, John: *See—*
Kopp, Reiner H.; and Schmermund, John, 4,219,530, Cl. 422-69.000.

Schmid, Hans; and Muhiemann, Hans R., to GABA AG. Novel oral composition for the care of the mouth and teeth. 4,219,541, Cl. 424-54.000.

Schmidt, Manfred: *See—*
Biermann, Peter; Ewald, Otto; Feucht, Rudi; and Schmidt, Manfred, 4,219,215, Cl. 280-615.000.

Schmiechen, Ralph: *See—*
Seidelmann, Dieter; Schmiechen, Ralph; Paschelke, Gert; and Muller, Bernd, 4,219,551, Cl. 424-248.540.

Schmitt, Frederick L.: *See—*
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., 4,219,451, Cl. 252-522.00R.

Schmitt, Hermann: *See—*
Cramer, Heinz; Handel, Hubert; Schefold, Manfred; Schmitt, Hermann; and Schoening, Josef, 4,219,384, Cl. 176-36.00C.

Schneck, Werner, to Ranco Incorporated. Liquid flow control valve. 4,219,182, Cl. 251-58.000.

Schneider, Gerard: *See—*
Biola, Georges; Komorn, Yves; and Schneider, Gerard, 4,219,389, Cl. 203-72.000.

Schneider, Gerhard, to Mo och Domsjo Aktiebolag. Tool having paired pivoted lever arms. 4,218,821, Cl. 30-254.000.

Schnell, Hans, to Escher Wyss GmbH. Method of treating waste paper for obtaining a stock suspension for the production of new paper and apparatus for the performance of the aforesaid method. 4,219,381, Cl. 162-4.000.

Schock, Samuel S. Water turbine. 4,219,304, Cl. 415-7.000.

Schoening, Josef: *See—*
Cramer, Heinz; Handel, Hubert; Schefold, Manfred; Schmitt, Hermann; and Schoening, Josef, 4,219,384, Cl. 176-36.00C.

Schulte, Clarence A., to Vetco Inc. Underwater multiple hydraulic line connector. 4,219,223, Cl. 285-26.000.

Schulte, Heinrich: *See—*
Weikert, Norbert B.; Tekathen, Hans; and Schulte, Heinrich, 4,219,239, Cl. 299-81.000.

Schulte, Uwe, to Demag A.G. Insulated mounting for live rails. 4,219,694, Cl. 174-156.000.

Schultz, John. Method and apparatus for solar heating and shading. 4,219,008, Cl. 126-419.000.

Schulze, Heinz: *See—*
Waddill, Harold G.; and Schulze, Heinz, 4,219,638, Cl. 528-421.000.

Schussler, Rainer: *See—*
Gruner, Heiko; Rieger, Franz; and Schussler, Rainer, 4,219,399, Cl. 204-195.00S.

Schuster, Wilhelm: *See—*
Schluter, Gert; and Schuster, Wilhelm, 4,219,334, Cl. 23-230.00B.

Schuylkill Metals Corporation: *See—*
Anthony, Theodore W., 4,219,353, Cl. 75-77.000.

Schwaerzler, Hans, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschrankter Haftung. Tiltable thrust nozzle. 4,219,156, Cl. 239-265.350.

Schwartz, Harold O.; and Kidd, Dennis E., to Wurlitzer Company, The. Master control LSI chip. 4,218,949, Cl. 84-1.030.

Schwartzman, Everett H. Cooling and heat pump systems and methods. 4,218,891, Cl. 62-116.000.

Schwarz, Alexander A.: *See—*
Uhl, Robert J.; and Schwarz, Alexander A., 4,218,971, Cl. 101-35.000.

Schwarzschild, Jack; Willis, Alan E.; and Wilson, Scott P., to Times Corporation. Compensation scheme for electrochromic displays. 4,219,809, Cl. 340-785.000.

Schwenk, Ulrich; Konig, Inge; and Streitberger, Horst, to Hoechst Aktiengesellschaft. Process for the manufacture of 2-(perfluoroalkyl)-ethanols. 4,219,681, Cl. 568-842.000.

Schwenk, Ulrich: *See—*
Konig, Inge; Streitberger, Horst; Krempl, Engelbert; and Schwenk, Ulrich, 4,219,680, Cl. 568-842.000.

Scifres, Donald R.; Burnham, Robert D.; and Streifer, William, to Xerox Corporation. Optical beam scanning by phase delays. 4,219,785, Cl. 331-94.50H.

Sclippa, Ferruccio. Rotary knives shear machine. 4,218,944, Cl. 83-345.000.

Screenex Wire Weaving Manufacturers (Prop.) Limited: *See—*
Freissle, Manfred F. A., 4,219,161, Cl. 239-523.000.

Scrivo, Jerry V.; and Weller, Peter A., to McCord Corporation. Shock-absorbing assembly. 4,219,189, Cl. 267-8.00R.

Seaquist Valve Company: *See—*
Ufferfilge, Roger K., 4,219,135, Cl. 222-402.130.

Sedgwick, Henry D. Moist tissue dispenser. 4,219,129, Cl. 221-63.000.

Sedmak, Joseph J.: *See—*
Grossberg, Sidney E.; and Sedmak, Joseph J., 4,219,337, Cl. 23-230.00B.

Seely, John H., to Abbott Laboratories. Fortimicin AN. 4,219,643, Cl. 536-17.00R.

Seidel, Bernd; and Dewey, George G., to Illinois Tool Works Inc. Hole-drilling and fastener-driving combination tool. 4,218,794, Cl. 7-138.000.

Seidel, Martin P.: *See—*
Moore, Curtis L.; and Seidel, Martin P., 4,219,791, Cl. 336-58.000.

Seidelmann, Dieter; Schmiechen, Ralph; Paschelke, Gert; and Muller, Bernd, to Schering Aktiengesellschaft. Aminoalkoxyphenylpyrrolidone antihypertonic agents and use thereof. 4,219,551, Cl. 424-248.540.

Seing, Sao H.: *See—*
Gordemer, David; and Seing, Sao H., 4,219,288, Cl. 406-28.000.

Selim, Harold N., to Regency Electronics, Inc. Automatic direction finding system. 4,219,821, Cl. 343-113.00R.

Selwitz, Charles M.: *See—*
Onopchenko, Anatoli; Sabourin, Edward T.; and Selwitz, Charles M., 4,219,679, Cl. 568-705.000.

Senseny, Robert M.: *See—*
United States of America, National Aeronautics and Space Administration; Gray, Norris C.; Senseny, Robert M.; and Bolton, Philip N., 4,219,084, Cl. 169-70.000.

Service (Engineers) Limited: *See—*
Gater, Robert; and Hancock, David L. J., 4,219,319, Cl. 425-229.000.

Settembre, Richard J. Nordic ski binding. 4,219,216, Cl. 280-615.000.

Seymour, Robert W.: *See—*
Weemes, Doyle A.; and Seymour, Robert W., 4,219,628, Cl. 525-166.000.

Shagivaleev, Mansur Z.: *See—*
Gusev, Valery F.; Ivanov, Gennady N.; Kontarev, Vladimir Y.; Krengel, Genrikh I.; Polivoda, Evgeny O.; Skvortsov, Alexandr N.; Schetinin, Jury I.; Kremlev, Vyacheslav Y.; Shagivaleev, Mansur Z.; and Yarmukhametov, Azat U., 4,219,874, Cl. 364-200.000.

Shamlian, Ralph B.; and Burr, John D. Pilot regulator. 4,219,017, Cl. 128-204.260.

Sharlow, Roger C., to Liquid Paper Corporation. Apparatus for ganging and cutting a plurality of layers of strip material. 4,218,945, Cl. 83-436.000.

Sharp Kabushiki Kaisha: *See*—
Hashimoto, Shintarou; Nakagawa, Hirohide; and Nishimura, Toshio, 4,218,876, Cl. 368-10.000.

Shearer, Kenneth O. Inline fuel heater. 4,218,999, Cl. 123-546.000.

Shell Oil Company: *See*—
Powell, James E., 4,219,563, Cl. 424-304.000.
Richardson, Edwin A.; Scheuerman, Ronald F.; and Berkshire, David C., 4,219,083, Cl. 166-300.000.
Roman, Steven A., 4,219,562, Cl. 260-304.000.
Roman, Steven A., 4,219,565, Cl. 424-305.000.
Roman, Steven A., 4,219,658, Cl. 549-52.000.
Verbrugge, Pieter A.; and Kramer, Petrus A., 4,219,504, Cl. 568-365.000.

Shelyazhenko, Svetlana V.: *See*—
Kastron, Valeria V.; Vitolin, Rasma O.; Fialkov, Jury A.; Shelyazhenko, Svetlana V.; Dubur, Gunar Y.; Kimenis, Agris A.; and Yagupolsky, Lev M., 4,219,653, Cl. 546-322.000.

Sheppard, Chester S.: *See*—
MacLeay, Ronald E.; and Sheppard, Chester S., 4,219,476, Cl. 260-192.000.

Sherry, Howard S.: *See*—
Kuehl, Guenter H.; and Sherry, Howard S., 4,219,406, Cl. 208-120.000.
Kuehl, Guenter H.; and Sherry, Howard S., 4,219,446, Cl. 252-453.000.

Shevchenko, Ivan I.: *See*—
Tokar, Vladimir A.; Zubik, Maria I.; Baklanov, Grigory M.; Matygin, Nikolai F.; Ustinov, Valentin S.; Kolesnikov, Anatoly V.; Gashenko, Stanislav I.; Rogatkin, Alexandr A.; Khlopkov, Leonid P.; Mikheeva, Vera I.; Lekalova, Lidia I.; Drepin, Nikolai F.; Feofanov, Lev P.; Khodotova, Nina E.; Shevchenko, Ivan I.; Telina, Larisa A.; Garmash, Vladimir I.; and Frantsevich, Andrei M., 4,219,363, Cl. 106-100.000.

Shibagaki, Masao: *See*—
Sato, Haruhiko; Shibagaki, Masao; and Ueda, Tadakazu, 4,219,003, Cl. 123-210.000.

Shibamoto, Nobuji: *See*—
Kurokawa, Masahiro; Oda, Noriyuki; and Shibamoto, Nobuji, 4,219,070, Cl. 165-11.00R.

Shibamoto, Norio: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Naganawa, Hiroshi; Ishizuka, Masaaki; Shibamoto, Norio; Oki, Toshikazu; and Inui, Taiji, 4,219,622, Cl. 435-78.000.

Shibata, Toshihiro: *See*—
Minagawa, Motonobu; Kubota, Naohiro; Haruna, Tohru; and Shibata, Toshihiro, 4,219,463, Cl. 260-45.80N.

Shibazaki, Hiroji; Edagawa, Setsuji; and Okamoto, Yoshinaga, to Shiraishi Kogyo Kaisha, Ltd. Method for improving calcium carbonate. 4,219,590, Cl. 427-215.000.

Shibuya, Yoshikazu: *See*—
Nitta, Tohei; Shibuya, Yoshikazu; and Fuziwara, Yukio, 4,219,862, Cl. 361-120.000.

Shidara, Keiichi: *See*—
Nonaka, Yasuhiko; Goto, Naohiro; and Shidara, Keiichi, 4,219,831, Cl. 357-31.000.

Shimada, Masaru: *See*—
Nishimura, Toshimichi; Yamanaka, Seisuke; and Shimada, Masaru, 4,219,841, Cl. 358-29.000.

Shimbo, Masatoshi: *See*—
Kogure, Takuyo; Shimbo, Masatoshi; and Goto, Toshiyuki, 4,219,696, Cl. 179-1.00G.

Shimizu, Masami: *See*—
Date, Nobuaki; Uchidoi, Masanori; Aizawa, Hiroshi; Shimizu, Masami; and Takishima, Yoshiyuki, 4,219,260, Cl. 354-23.00D.

Shimizu, Masao: *See*—
Naito, Akinori; Shimizu, Masao; Mori, Masatsugu; and Matsubara, Yukihiro, 4,218,930, Cl. 74-216.000.

Shinagawa, Mitsuhisa: *See*—
Shinkawa, Keiro; Shoyama, Hiroji; Sodeyama, Chuichi; and Shinagawa, Mitsuhisa, 4,219,779, Cl. 455-321.000.

Shinkawa, Keiro; Shoyama, Hiroji; Sodeyama, Chuichi; and Shinagawa, Mitsuhisa, to Hitachi, Ltd. Self-oscillating mixer circuit. 4,219,779, Cl. 455-321.000.

Shinn, Charles E., II, to Hewlett-Packard Company. DC-Coupled Schmitt trigger circuit with input impedance peaking for increasing switching speed. 4,219,744, Cl. 307-290.000.

Shioi, Shunsuke: *See*—
Miyake, Makoto; Shiozaki, Tomoharu; Shioi, Shunsuke; Shiraishi, Tetsuo; and Matsushita, Takao, 4,219,439, Cl. 252-316.000.

Shiozaki, Tomoharu: *See*—
Miyake, Makoto; Shiozaki, Tomoharu; Shioi, Shunsuke; Shiraishi, Tetsuo; and Matsushita, Takao, 4,219,439, Cl. 252-316.000.

Shiraishi Kogyo Kaisha, Ltd.: *See*—
Shibazaki, Hiroji; Edagawa, Setsuji; and Okamoto, Yoshinaga, 4,219,590, Cl. 427-215.000.

Shiraishi, Tetsuo: *See*—
Miyake, Makoto; Shiozaki, Tomoharu; Shioi, Shunsuke; Shiraishi, Tetsuo; and Matsushita, Takao, 4,219,439, Cl. 252-316.000.

Shiraki, Manabu: *See*—
Ban, Itsuki; Shiraki, Manabu; and Egami, Kazuhito, 4,219,750, Cl. 310-154.000.
Ban, Itsuki; Shiraki, Manabu; and Egami, Kazuhito, 4,219,751, Cl. 310-154.000.

Shishido, Yoshiaki: *See*—
Fujii, Tatsuo; Tabata, Yoichi; Oku, Nobuyuki; and Shishido, Yoshiaki, 4,219,296, Cl. 414-273.000.

Shoyama, Hiroji: *See*—
Shinkawa, Keiro; Shoyama, Hiroji; Sodeyama, Chuichi; and Shinagawa, Mitsuhisa, 4,219,779, Cl. 455-321.000.

Shur-Lok Corporation: *See*—
Lozano, Anthony H., 4,219,064, Cl. 151-41.750.

Siekmeier, David A.: *See*—
Zimmerer, Arthur L., deceased; First National Bank and Trust Co., joint executor; Siekmeier, David A.; Andersen, Glen L.; and Meis, Charles H., 4,219,043, Cl. 137-312.000.

Siemens Aktiengesellschaft: *See*—
Dorda, Gerhard; and Eisele, Ignaz, 4,219,829, Cl. 357-23.000.
Doring, Hermann, 4,219,108, Cl. 191-29.00R.
Frosien, Jurgen; and Reschke, Helmut, deceased, 4,219,719, Cl. 219-121.0EM.
Grassmann, Hans-Christian, 4,218,830, Cl. 34-1.000.
Kober, Rudolf; Kopp, Herbert; and Kuznia, Christian, 4,219,873, Cl. 364-200.000.
Tschunt, Edgar, 4,219,733, Cl. 250-445.00T.

Siemens-Albis Aktiengesellschaft: *See*—
Schenkel, Albert; and Leuenberger, Urs, 4,219,816, Cl. 343-16.00M.

Sifniades, Stylianos: *See*—
Cooke, Robert S.; Baker, Josefina T.; and Sifniades, Stylianos, 4,219,635, Cl. 528-182.000.

SIG Schweizerische Industrie-Gesellschaft: *See*—
Loewenthal, Horst, 4,219,112, Cl. 198-449.000.

Sigmund, Fantisek. Sealing rings for the ends of heat-insulated pipe units. 4,219,225, Cl. 285-47.000.

Sigri Elektrographit GmbH: *See*—
Pietzka, Gerhard; Tillmanns, Harald; and Romey, Ingo, 4,219,405, Cl. 208-50.000.

Silbernagel, Hermann. Sign holder. 4,219,179, Cl. 248-488.000.

Siliconix, Inc.: *See*—
van Loon, Paul G. G.; Altiery, Anthony S.; and Kay, Steeve T. S., 4,219,835, Cl. 357-55.000.

Simms, John A., to Du Pont de Nemours, E. I., and Company. Low molecular weight isocyanato-acrylate copolymers. 4,219,632, Cl. 526-218.000.

Simon, Donald J., to Sargent Industries, Inc. Pump assembly. 4,219,311, Cl. 417-260.000.

Simonoff, Ely, to Opelika Manufacturing Corporation. Display holder. 4,219,140, Cl. 223-87.000.

Singer Company, The: *See*—
Rettberg, Harvey C., 4,219,749, Cl. 310-89.000.

Singer, Malcolm S., to Chevron Research Company. 2-(Trichloromethyldithio)acetic acid and related compounds. 4,219,673, Cl. 562-602.000.

Sinn, Richard; Nagel, Otto; Sander, Bruno; Bonitz, Eckhard; Scherling, Kurt; Zettler, Hans D.; Stoehr, Dieter; and Berbner, Heinz, to BASF Aktiengesellschaft. Manufacture of fibrids from polymers. 4,219,512, Cl. 264-11.000.

Sinsky, John J., to Intermountain Research and Development Corporation. Storage level monitor. 4,219,133, Cl. 222-39.000.

Sisemore, Clyde J., to United States of America, Energy. Method for maximizing shale oil recovery from an underground formation. 4,219,237, Cl. 299-2.000.

Skaggs, Boyd T.; and Patton, Doyle W., to Container Corporation of America. Partition. 4,219,146, Cl. 229-15.000.

Skelly, Michael. Multiple flow selection valve. 4,219,049, Cl. 137-625.300.

SKF Kugellagerfabriken GmbH: *See*—
Brandenstein, Manfred; Olschewski, Armin; Finzel, Sigismund; Gossmann, Willi; and Stark, Josef, 4,219,240, Cl. 301-5.700.

Skuballa, Werner: *See*—
Vorbruggen, Helmut; Skuballa, Werner; Raduchel, Bernd; Losert, Wolfgang; Loge, Olaf; Muller, Bernd; and Mannesmann, Gerda, 4,219,479, Cl. 424-263.000.

Skvortsov, Alexandr N.: *See*—
Gusev, Valery F.; Ivanov, Gennady N.; Kontarev, Vladimir Y.; Krengel, Genrikh I.; Polivoda, Evgeny O.; Skvortsov, Alexandr N.; Schetinin, Jury I.; Kremlev, Vyacheslav Y.; Shagivaleev, Mansur Z.; and Yarmukhametov, Azat U., 4,219,874, Cl. 364-200.000.

Slappey, Thomas E.; and Capehart, Dan B., to American Hospital Supply Corporation. Ophthalmic endothelial microscope. 4,219,257, Cl. 351-1.000.

Sleezer, Paul D.: *See*—
Lin, Jeng S.; and Sleezer, Paul D., 4,219,495, Cl. 260-456.00P.

Slinkard, William E.; and Baylis, Anthony B., to Celanese Corporation. Oxidation of butene to acetic acid. 4,219,671, Cl. 562-548.000.

Sluis, Mark H.; and Auer, John H., Jr., to General Signal Corporation. Alarms between stations with relative motion. 4,219,837, Cl. 367-128.000.

Smith, Arthur C., executor: *See*—
Smith, Maryanne, deceased; and Smith, Arthur C., executor, 4,219,395, Cl. 204-180.00R.

Smith, Chester J.: *See*—
Venkatram, Ramdas; Kamath, Vasanth R.; and Smith, Chester J., 4,219,675, Cl. 568-563.000.

Smith, Clarence G., Jr., to Muskin Corporation. Air-injection cleaning system for liquid filters. 4,219,423, Cl. 210-169.000.

Smith, Derek R.; and Worgan, Gordon P., to Union Carbide Corporation. Composite drive shafts. 4,218,895, Cl. 64-1.00S.

Smith, Douglas D.: *See*—
Cunningham, Richard N.; and Smith, Douglas D., 4,218,962, Cl. 93-84.00R.

Smith, Jack E., Jr. Malfunction detector for a dictation system. 4,219,702, Cl. 179-100.1DR.

Smith Kline & French Laboratories Limited: *See*—
Durant, Graham J.; Ganellin, Charon R.; and Sach, George S., 4,219,553, Cl. 424-250.000.

Smith, Leslie H., to Imperial Chemical Industries Limited. Alkanolamine derivatives. 4,219,561, Cl. 424-304.000.

Smith, Maryanne, deceased; and by Smith, Arthur C., executor. Electrochemical fractionation process. 4,219,395, Cl. 204-180.00R.

Smith, Otto J. M. Method of aligning and locating the mirrors of a collector field with respect to a receptor tower. 4,219,729, Cl. 250-203.00R.

SmithKline Corporation: *See*—
Laforest, Jacqueline S., 4,219,663, Cl. 560-62.000.

Snow, A. Ray. Door stop. 4,218,807, Cl. 16-86.00A.

Societe Anonyme D.B.A.: *See*—
Carre, Jean J., 4,219,242, Cl. 303-6.00C.
Delaunay, Jean, 4,219,105, Cl. 188-73.500.

Societe Anonyme Francaise du Ferodo: *See*—
Dauvergne, Jean L. R., 4,218,887, Cl. 60-550.000.

S.A. Martin: *See*—
Capdeboscq, Bernard, 4,219,294, Cl. 414-46.000.

Societe Anonyme: Poclain: *See*—
Bourges, Bernard M., 4,218,960, Cl. 92-111.000.

Societe Chimique de la Grande Paroisse, Azote et Produits Chimiques: *See*—
Normand, Alfred, 4,219,528, Cl. 422-62.000.

Societe Europeene de Propulsion: *See*—
Maistre, Michel, 4,219,597, Cl. 428-105.000.

Soderman, Donald A.: *See*—
Esch, Ronald P.; Folsom, Robert M.; Liu, Cheng-Yih; Rideout, Vincent L.; Soderman, Donald A.; and Wenning, G. Thomas, 4,219,834, Cl. 357-41.000.

Soderstrom, Gert. Water reservoir. 4,219,428, Cl. 210-522.000.

Sodeyama, Chuichi: *See*—
Shinkawa, Keiro; Shoyama, Hiroji; Sodeyama, Chuichi; and Shinagawa, Mitsuhisa, 4,219,779, Cl. 455-321.000.

Soete, Paul D.: *See*—
Hagrman, Raymond L.; Sandridge, Jack R.; and Soete, Paul D., 4,218,879, Cl. 60-39.28R.

Soiron, Charles: *See*—
Abel, Heinz; and Soiron, Charles, 4,219,332, Cl. 8-532.000.

Soldati, Gianluigi; Stitley, James W.; Wulf, Ronald J.; and Jass, Herman E. Method for inhibiting perspiration. 4,219,540, Cl. 424-65.000.

Soma, Nobuo; Morimura, Syoji; Yoshioka, Takao; and Kurumada, Tomoyuki, to Sankyo Company Limited. Piperidine-spiro-hydantoin derivatives and their use as polymer stabilizers. 4,219,465, Cl. 260-45.8NT.

Somers, Giles N., to Claire Corporation AG. Protective case for tape recording cassettes. 4,219,118, Cl. 206-387.000.

Sony Corporation: *See*—
Nishimura, Toshimichi; Yamanaka, Seisuke; and Shimada, Masaru, 4,219,841, Cl. 358-29.000.

South Bend Lathe: *See*—
Buccicone, Dana F., 4,218,942, Cl. 82-22.000.

Southworth, Inc.: *See*—
Brewer, John, 4,219,186, Cl. 254-9.00C.

Spadaro, James J.: *See*—
Kadan, Ranjit S.; Ziegler, George M., Jr.; and Spadaro, James J., 4,219,469, Cl. 260-123.500.

Sparks, Alton N.: *See*—
Klun, Jerome A.; Plimmer, Jack R.; Bierl-Leonhardt, Barbara A.; and Sparks, Alton N., 4,219,542, Cl. 424-84.000.

Special Metal Corporation: *See*—
Sutton, Willard H.; and Johnson, Walter E., 4,219,361, Cl. 106-63.000.

Specialty Products International, Ltd.: *See*—
Beadle, Leigh P., 4,218,964, Cl. 99-275.000.

Speck, Robert M.; and Beil, Lawrence E., to Cathodic Protection Services, Inc. Sensor system for an impressed cathodic protection circuit. 4,219,807, Cl. 340-664.000.

Spector, George: *See*—
Gallagher, Michael A.; and Spector, George, 4,218,841, Cl. 43-24.000.

Speeflo Manufacturing Corporation: *See*—
Malcolm, David H., 4,219,865, Cl. 361-228.000.

Spekle, Hendrikus J.; and Brants, Johannes P., to Organon Teknika B.V. Dialysis device. 4,219,426, Cl. 210-232.000.

Sperry Corporation: *See*—
Allemeersch, Jozef R. G.; and Devriese, Thierry E. G., 4,218,864, Cl. 56-11.200.
Chaumont, Gerard P. L.; Boirin, Jean-Claude A.; and Jouffroy, Jacques J. M. G., 4,218,865, Cl. 56-13.600.
Hale, John K.; and Ostergren, William F., 4,219,163, Cl. 239-662.000.

Sperry Rand Corporation: *See*—
Parrish, Charles A., 4,218,866, Cl. 56-341.000.

Spong, Fred W., to RCA Corporation. Optical record playback apparatus employing light frequency at which alternate regions of record track exhibit anti-reflection condition. 4,219,848, Cl. 358-128.500.

Sponing, Gunter, to Continental Gummi-Werke Aktiengesellschaft. Printing blanket and method of making same. 4,219,595, Cl. 428-40.000.

Spooner Edmeston Engineering Limited: *See*—
Coar, Ronald, 4,218,833, Cl. 34-156.000.

Sprague Electric Company: *See*—
Maher, Galeb H., 4,219,866, Cl. 361-321.000.

Sprinkle, Leslie M., to Mallinckrodt, Inc. Radioiodination process. 4,219,538, Cl. 424-1.000.

Spurlin, William V., to Syn-Energy, Inc. Vibratory device for feeders and the like. 4,218,929, Cl. 74-61.000.

Srivastava, Gopal, to Zenith Radio Corporation. Color corrector. 4,219,840, Cl. 358-28.000.

Stacey, Ronald J.: *See*—
Pope, John A.; Rennison, Stuart C.; and Stacey, Ronald J., 4,219,616, Cl. 430-152.000.

Stahly, Frederick A., to Eastman Kodak Company. Electrophoretic migration imaging composition and process using same. 4,219,614, Cl. 430-38.000.

Standard Oil Company: *See*—
Dolhyj, Serge R.; and Velenyi, Louis J., 4,219,687, Cl. 585-267.000.

Standard Oil Company (Indiana): *See*—
Johnson, Paul E., 4,219,633, Cl. 526-348.000.

Standard Oil Company (Ohio): *See*—
Milberger, Ernest C.; Dolhyj, Serge R.; and Bremer, Noel J., 4,219,484, Cl. 260-346.750.

Stansbury, Benjamin, to American Hospital Supply Corporation. Highly stretchable glove and form for making same. 4,218,778, Cl. 2-163.000.

Stapp, Paul R., to Phillips Petroleum Company. Alkenol production. 4,219,682, Cl. 568-879.000.

Star Seimitsu Kabushiki Kaisha: *See*—
Maeda, Katsumi, 4,219,280, Cl. 400-124.000.

Stark, Friedrich: *See*—
Hoffmann, Otto-Horst; Heil, Walter; and Stark, Friedrich, 4,219,183, Cl. 251-159.000.

Stark, Josef: *See*—
Brandenstein, Manfred; Olschewski, Armin; Finzel, Sigismund; Gossmann, Willi; and Stark, Josef, 4,219,240, Cl. 301-5.700.

Stark, Joseph; and Muller-Matthesius, Reinhard, to Behringwerke Aktiengesellschaft. Stabilized nicotinamide-adenine dinucleotides and process for their preparation. 4,219,645, Cl. 536-27.000.

Stark, Martin H., to Arrow Paper Products Company. Container construction. 4,219,149, Cl. 229-37.00R.

Stary, Christof: *See*—
Howard, Thomas B.; and Stary, Christof, 4,218,863, Cl. 53-547.000.

Stauffer Chemical Company: *See*—
Gutman, Arnold D., 4,219,547, Cl. 424-212.000.
Teach, Eugene G., 4,219,655, Cl. 548-215.000.

Steckmesser, Bradd E., to American Hospital Supply Corporation. Adjustable mattress support for stretcher or the like. 4,218,788, Cl. 5-74.00R.

Steigerwald Strahltechnik GmbH: *See*—
Moench, Clauspeter, 4,219,720, Cl. 219-121.0EM.

Stein, Marc T., to Motorola, Inc. Unity gain amplifier for sourcing current to a capacitive load or the like. 4,219,782, Cl. 330-257.000.

Steinemann, Samuel, to Institut Straumann AG. Plates for osteosynthesis. 4,219,015, Cl. 128-92.00D.

Steiner, Eginhard: *See*—
Beffa, Fabio; and Steiner, Eginhard, 4,219,473, Cl. 260-151.000.

Steiner, Peter, to Foster Wheeler Energy Corporation. Desulfurization and low temperature regeneration of carbonaceous adsorbent. 4,219,537, Cl. 423-569.000.

Stephens, James B.: *See*—
United States of America, National Aeronautics and Space Administration; and Stephens, James B., 4,218,892, Cl. 62-514.00R.

Stephenson, Donald K.; and Stephenson, Douglas J. Apparatus for measuring elevation. 4,218,919, Cl. 73-432.0HA.

Stephenson, Douglas J.: *See*—
Stephenson, Donald K.; and Stephenson, Douglas J., 4,218,919, Cl. 73-432.0HA.

Stewart, Gerald D.: *See*—
Campion, John S.; and Stewart, Gerald D., 4,219,253, Cl. 350-129.000.

Stewart, James F., to Pako Corporation. Film guide for use with film cleaning apparatus. 4,218,801, Cl. 15-100.000.

Stichting Bouwcentrum: *See*—
Van Heel, Joannes M., 4,219,010, Cl. 126-430.000.

Stitley, James W.: *See*—
Soldati, Gianluigi; Stitley, James W.; Wulf, Ronald J.; and Jass, Herman E., 4,219,540, Cl. 424-65.000.

Stockinger, Friedrich; and Lohse, Friedrich, to Ciba-Geigy Corporation. Process for the preparation of pyrrolidonecarboxylic acid/-metal/amine complexes. 4,219,650, Cl. 546-11.000.

Stockman, Richard F., to Air Preheater Company, Inc., The. Quick release for sector plate. 4,219,069, Cl. 165-9.000.

Stoehr, Dieter: *See*—
Sinn, Richard; Nagel, Otto; Sander, Bruno; Bonitz, Eckhard; Scherling, Kurt; Zettler, Hans D.; Stoehr, Dieter; and Berbner, Heinz, 4,219,512, Cl. 264-11.000.

Stokbroekx, Raymond: *See*—
Janssens, Frans; Stokbroekx, Raymond; Torremans, Joseph; and Luyckx, Marcel. 4,219,559, Cl. 424-267.000.

Stoltefuss, Jurgen: *See*—
Haberkorn, Axel; Scheer, Martin; and Stoltefuss, Jurgen, 4,219,552, Cl. 424-249.000.

Stolzer, Claus: *See*—
Riebel, Hans-Jochem; and Stolzer, Claus, 4,219,511, Cl. 260-973.000.

Stop Alert Corporation: *See—*
Booth, Robert G., 4,219,710, Cl. 200-81.00R.

Stopinc Aktiengesellschaft: *See—*
Meier, Ernst, 4,219,188, Cl. 266-236.000.

Storm, Roger S., to Dart Industries Inc. P-Oxybenzoyl copolyesters comprising thiodiphenol components and having improved flexibility and solubility in organic solvents. 4,219,629, Cl. 525-167.000.

Stortz, Robert K., to Ohio Thermometer Company, The. Outdoors thermometer unit. 4,218,917, Cl. 73-378.000.

Stothert & Pitt Limited: *See—*
Duckett, Frederick L., 4,219,228, Cl. 294-81.0SF.

Stotz, Wolf-Gunter: *See—*
Lehmann, Rolf; and Stotz, Wolf-Gunter, 4,218,905, Cl. 72-21.000.

Stragier, Marcel G.; Peterson, Theodore J.; Bingman, John W.; and Barker, Julius A., to Government Innovators. Rapid rail. 4,219,298, Cl. 414-409.000.

Straslicka, William A., to Carrier Corporation. Sealing assembly. 4,219,201, Cl. 277-53.000.

Strauss, Karl-Peter: *See—*
Rosner, Ortwin; and Strauss, Karl-Peter, 4,219,261, Cl. 354-23.00D.

Streebin, Leale E.: *See—*
Nassef, N. A.; and Streebin, Leale E., 4,219,415, Cl. 210-32.000.

Streifer, William: *See—*
Scifres, Donald R.; Burnham, Robert D.; and Streifer, William, 4,219,785, Cl. 331-94.50H.

Streitberger, Horst: *See—*
Konig, Inge; Streitberger, Horst; Krempl, Engelbert; and Schwenk, Ulrich, 4,219,680, Cl. 568-842.000.
Schwenk, Ulrich; Konig, Inge; and Streitberger, Horst, 4,219,681, Cl. 568-842.000.

Streubel, Wolf: *See—*
Obenaus, Fritz; Droste, Wilhelm; Streubel, Wolf; Zolffel, Michael; and Muller, Wolfgang, 4,219,678, Cl. 568-697.000.

Strickland, James K., to Strickland Systems, Inc. Tying apparatus for concrete form panel. 4,219,180, Cl. 249-219.00R.

Strickland Systems, Inc.: *See—*
Strickland, James K., 4,219,180, Cl. 249-219.00R.

Stroupe, Stephen D.: *See—*
Plattner, Jacob J.; Stroupe, Stephen D.; and Voss, Houston F., 4,219,497, Cl. 260-501.140.

Structural Fibers, Inc.: *See—*
Wiltshire, Arthur J.; Nara, Harry R.; LeBreton, Edward T.; and Bliley, Ward L., 4,219,125, Cl. 220-5.00A.

Stuart, Eric J.; and de Mon, Bob, to Hoogovens Ijmuiden, B.V. Method for the regeneration of a tinning electrolyte. 4,219,390, Cl. 204-54.00R.

Stuben, Werner; Eltzschig, Rudolf; and Friedrichs, Konrad, to Wilhelm Fette GmbH. Preforming press. 4,219,320, Cl. 425-345.000.

Sturgill, James D., to RPC Corporation. Straddle crane apparatus. 4,219,094, Cl. 180-236.000.

Sudan, Krishan K.; and Berchem, Antoine, to Reichhold Limited. Phenol formaldehyde resin foams. 4,219,623, Cl. 521-85.000.

Sugahara, Yujiro; Usui, Koichi; Ogawa, Masahide; Kurosaki, Hideaki; and Imafuku, Shigehisa, to Mizusawa Kagaku Kogyo Kabushiki Kaisha. Alkali metal aluminosilicate detergent builder. 4,219,535, Cl. 423-328.000.

Sugihara, Yasumasa, to General Corporation, The. Digital signal regulation system. 4,219,890, Cl. 375-98.000.

Sumitomo, Hiroyuki, to Hisaka Works, Ltd. Plate type condenser. 4,219,079, Cl. 165-159.000.

Sunday, William H.: *See—*
Rhinefrank, Robert A.; and Sunday, William H., 4,218,983, Cl. 113-1.00E.

Surakka, Jorma; Pokkinen, Martti; Makkonen, Jorma; Valkama, Erkki; Karkkainen, Viljo; Rabina, Pekka; and Matula, Jouni, to Enso-Gutzeit Osakeyhtio. Disk defibrator. 4,219,166, Cl. 241-246.000.

Surowitz, Philip; and Wetzel, William L., to Chicopee. Moisturizing mat and process for making the same. 4,219,600, Cl. 428-196.000.

Sutton, Willard H.; and Johnson, Walter E., to Special Metal Corporation. Method of improving the susceptibility of a material to microwave energy heating. 4,219,361, Cl. 106-63.000.

Suzuki, Hideo; Kasai, Touru; and Matsumoto, Ken, to Fujisoku Electric Co., Ltd. Lock-off switch. 4,219,714, Cl. 200-157.000.

Suzuki, Masatosi: *See—*
Miwa, Naoto; Ouki, Masami; Tanaka, Katsuhiko; and Suzuki, Masatosi, 4,219,359, Cl. 106-39.500.

Suzuki, Masayuki; Yamamichi, Masayoshi; Murakami, Hiroyasu; and Ito, Tadashi, to Canon Kabushiki Kaisha. Safety device for exposure factor setting dial. 4,219,267, Cl. 354-289.000.

Suzuki, Yasuo: *See—*
Tamura, Akira; Suzuki, Yasuo; and Oikawa, Akira, 4,219,066, Cl. 152-353.00G.

Sweeny, Keith H., to Envirogenics Systems Company. Treatment of reducible hydrocarbon containing aqueous stream. 4,219,419, Cl. 210-59.000.

Swithenbank, Colin: *See—*
Bayer, Horst O.; Swithenbank, Colin; and Yih, Roy Y., 4,219,352, Cl. 71-105.000.

Syn-Energy, Inc.: *See—*
Spurlin, William V., 4,218,929, Cl. 74-61.000.

Szentmiklosi, Peter: *See—*
Knoll, Josef; Meszaros, Zoltan; Hermecz, Istvan; Fulop, Ferenc; Bernath, Gabor; Virag, Sandor; Nagy, Gabor; and Szentmiklosi, Peter, 4,219,649, Cl. 544-282.000.

Tabata, Yoichi: *See—*
Fujii, Tatsuo; Tabata, Yoichi; Oku, Nobuyuki; and Shishido, Yoshiaki, 4,219,296, Cl. 414-273.000.

Tabatznik, Robert A.; and Reiner, Steven H., deceased (by Reiner, Jack P., administrator). Smoking device. 4,219,032, Cl. 131-170.00A.

Tagiarino, Joseph. Water saving trap primer. 4,218,786, Cl. 4-206.000.

Taguchi, Haruo: *See—*
Sato, Kunihiko; Urata, Tetsuro; Asamoto, Tetsuhiro; Asakawa, Kobun; Uebayashi, Takeo; and Taguchi, Haruo, 4,219,718, Cl. 219-69.00M.

Takada, Hiroshi: *See—*
Oba, Yoichi; Kano, Tsuyoshi; Hayashi, Masaaki; Takada, Hiroshi; Kanda, Katuzo; and Eguchi, Shusaku, 4,219,587, Cl. 427-64.000.

Takada, Juichiro, to Takata Kojyo Co., Ltd. Belt carried automatic locking retractor. 4,219,236, Cl. 297-476.000.

Takahashi, Izumi. Device for automatically assembling tiles for the Mah-Jongg game. 4,219,200, Cl. 273-309.000.

Takahashi, Sankichi: *See—*
Noshimura, Yusaku; Koseki, Yasuo; Kubota, Masayoshi; Kubota, Shoji; and Takahashi, Sankichi, 4,219,441, Cl. 252-412.000.

Takahashi, Yoshimasa, to Sanyo Electric Co., Ltd. Projection type color television system. 4,219,843, Cl. 358-60.000.

Takano, Hiroji, to Matsushita Electric Industrial Co., Ltd. Component mounting apparatus. 4,218,817, Cl. 29-741.000.

Takano, Shuntaro: *See—*
Saikawa, Isamu; Takano, Shuntaro; Yoshida, Chosaku; Takashima, Okuta; Momonoi, Kaishu; Kuroda, Seietsu; Komatsu, Miwako; Yasuda, Takashi; and Kodama, Yutaka, 4,219,554, Cl. 424-250.000.

Takaoka, Yukio; and Kawasaki, Masahiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera electrical self-timer. 4,219,262, Cl. 354-38.000.

Takashima, Okuta: *See—*
Saikawa, Isamu; Takano, Shuntaro; Yoshida, Chosaku; Takashima, Okuta; Momonoi, Kaishu; Kuroda, Seietsu; Komatsu, Miwako; Yasuda, Takashi; and Kodama, Yutaka, 4,219,554, Cl. 424-250.000.

Takata, Akira; and Ozaki, Kazuhiko, to Hitachi, Ltd. Construction of adjustable blade shaft bearing in axial-flow fan with adjustable blades. 4,219,310, Cl. 416-146.00A.

Takata Kojyo Co., Ltd.: *See—*
Takada, Juichiro, 4,219,236, Cl. 297-476.000.

Takemoto, Shiro G.; and Sasaki, Yukihiko, to Avery International Corporation. Matrix free thin labels. 4,219,596, Cl. 428-41.000.

Takeo, Tadashi: *See—*
Maezawa, Nobuji; Takeo, Tadashi; and Ozawa, Shogo, 4,219,723, Cl. 219-125.100.

Takeshima, Sadao, to Jidoshakiki Co., Ltd. Drive circuit for solenoid pump. 4,219,863, Cl. 361-156.000.

Takeuchi, Tomio: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Naganawa, Hiroshi; Ishizuka, Masaaki; Shibamoto, Norio; Oki, Toshikazu; and Inui, Taiji, 4,219,622, Cl. 435-78.000.

Takishima, Yoshiyuki: *See—*
Date, Nobuaki; Uchidoi, Masanori; Aizawa, Hiroshi; Shimizu, Masami; and Takishima, Yoshiyuki, 4,219,260, Cl. 354-23.00D.

Talmadge, Michael: *See—*
Talmadge, Michael J.; Salvatore, Arthur C., Jr.; and Garafalo, Anthony, 4,219,073, Cl. 165-39.000.

Talmadge, Michael J.; Salvatore, Arthur C., Jr.; and Garafalo, Anthony, to Salvatore, Arthur C., Jr.; and Talmadge, Michael. Heat saver device. 4,219,073, Cl. 165-39.000.

Tamehiro, Hiroshi: *See—*
Nakasugi, Hajime; Imagumbai, Masana; and Tamehiro, Hiroshi, 4,219,371, Cl. 148-12.00F.

Tamura, Akira; Suzuki, Yasuo; and Oikawa, Akira, to Bridgestone Tire Company Limited. Pneumatic tire having a sidewall protect rib provided with an articular part or groove. 4,219,066, Cl. 152-353.00G.

Tamura, Takaaki; Ozawa, Tomeyoshi; Ito, Wataru; Fujita, Norihiko; and Negishi, Naoki, to Industrial Research Institute. Apparatus for enriching oxygen contained in water. 4,219,424, Cl. 210-201.000.

Tanaka, Hideo: *See—*
Torii, Sigeru; Tanaka, Hideo; and Ukida, Masashi, 4,219,393, Cl. 204-78.000.

Tanaka, Katsuhiko: *See—*
Miwa, Naoto; Ouki, Masami; Tanaka, Katsuhiko; and Suzuki, Masatosi, 4,219,359, Cl. 106-39.500.

Taniguchi, Hitoshi: *See—*
Kawasaki, Yoichi; Taniguchi, Hitoshi; Yamato, Yukiomi; and Minamiyama, Kyoko, 4,219,576, Cl. 426-262.000.

Taniguchi, Itsuki; Itoh, Ryuichi; Iwatsuki, Toshihiro; and Ohuchi, Shigehiro, to Toray Industries, Inc. Resinous composition for surface-treating reinforcing fibers and surface-treating process. 4,219,457, Cl. 260-38.000.

Tate, Jack F.: *See—*
Allen, Joseph C.; and Tate, Jack F., 4,219,429, Cl. 252-8.55C.

Tatlock, Edwin, to Chloride Group Limited. Vented filling plugs for electric storage cells. 4,219,612, Cl. 429-86.000.

Tauber, Thomas E.: *See—*
Magee, James H.; and Tauber, Thomas E., 4,219,805, Cl. 340-631.000.

Taylor, Albert M., to Wellman Thermal Systems Corporation. Electric furnace heater assembly. 4,219,692, Cl. 13-25.000.

Taylor, David W., to Microfuels, Inc. Comminution of pulverulent material by fluid energy. 4,219,164, Cl. 241-5.000.

Taylor & Gaskin Inc.: *See*—
Allor, Bernard J., Jr., 4,219,111, Cl. 198-355.000.

Taylor, William I.: *See*—
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., 4,219,451, Cl. 252-522.00R.

Teach, Eugene G., to Stauffer Chemical Company. Process for the production of N-acyl substituted oxazolidines. 4,219,655, Cl. 548-215.000.

Technical Development Company: *See*—
Magee, James H.; and Tauber, Thomas E., 4,219,805, Cl. 340-631.000.

Tekathen, Hans: *See*—
Weikert, Norbert B.; Tekathen, Hans; and Schulte, Heinrich, 4,219,239, Cl. 299-81.000.

Tektronix, Inc.: *See*—
Wimmer, Guenther W., 4,219,767, Cl. 318-696.000.

Teledyne Industries, Inc.: *See*—
Fang, Michael S., 4,219,372, Cl. 148-133.000.

Teleflex Incorporated: *See*—
Ion, John C.; Zieber, George M., Jr.; and Loewenstern, Stanley L., 4,218,935, Cl. 74-501.00R.

Telina, Larisa A.: *See*—
Tokar, Vladimir A.; Zubik, Maria I.; Baklanov, Grigory M.; Matygin, Nikolai F.; Ustinov, Valentin S.; Kolesnikov, Anatoly V.; Gashenko, Stanislav I.; Rogatkin, Alexandr A.; Khlopkov, Leonid P.; Mikheeva, Vera I.; Lekalova, Lidia I.; Drepin, Nikolai F.; Feofanov, Lev P.; Khodotova, Nina E.; Shevchenko, Ivan I.; Telina, Larisa A.; Garmash, Vladimir I.; and Frantsevich, Andrei M., 4,219,363, Cl. 106-100.000.

Temple, Victor A. K., to Electric Power Research Institute, Inc. Multigate light fired thyristor and method. 4,219,833, Cl. 357-38.000.

Templeton, Steven R., to Honeywell Inc. Digital event input circuit for a computer based process control system. 4,219,875, Cl. 364-200.000.

Tenneco Chemicals, Inc.: *See*—
Saggese, Michael F.; Owens, Fred V.; and Fila, Barbara, 4,219,640, Cl. 528-501.000.

Terada, Katumi; and Nemoto, Kazuyuki, to Olympus Optical Co., Ltd. Apparatus for use with a motor drive. 4,219,764, Cl. 318-48.000.

Tersteeg, Glenn E.; Nosco, Louis C.; Meyer, Robert J.; and Whitcomb, Rodney J., to Eastman Kodak Company. Incubator for chemical analyzer. 4,219,529, Cl. 422-65.000.

Texaco Development Corporation: *See*—
Waddill, Harold G.; and Schulze, Heinz, 4,219,638, Cl. 528-421.000.

Texaco Inc.: *See*—
Allen, Joseph C.; and Tate, Jack F., 4,219,429, Cl. 252-8.55C.
Kalfoglou, George, 4,219,082, Cl. 166-273.000.

Texas Instruments Incorporated: *See*—
Harrison, Earnest R.; and Johnston, Roy C., 4,219,097, Cl. 181-120.000.
McElroy, David J., 4,219,836, Cl. 357-55.000.
Reid, Lee R.; and Ratliff, Charles R., 4,219,771, Cl. 324-158.0P.
Thomson, John T; and Johnston, Roy C., 4,219,098, Cl. 181-120.000.

Teytaud, Claude, to Motorola, Inc. Ultrasonic welding process for automobile alternator slip rings. 4,219,249, Cl. 339-5.00R.

Thermatool Corp.: *See*—
Rudd, Wallace C.; and Udall, Humfrey N., 4,219,722, Cl. 219-123.000.

Thermo King Corporation: *See*—
Haggerty, Dennis M., 4,219,314, Cl. 418-24.000.

Thibodeau, James, to National Computer Systems, Inc. Apparatus for photoelectrically reading a translucent answer document having a bias bar printed thereon. 4,219,736, Cl. 250-557.000.

Thomas J. Lipton, Inc.: *See*—
Dea, Iain C. M.; and Pillai, Devamanohari, 4,219,581, Cl. 426-565.000.

Thomas, Jesse: *See*—
Huffman, Robert P.; and Thomas, Jesse, 4,218,881, Cl. 60-325.000.

Thompson, David F.: *See*—
Mouton, William J., Jr.; and Thompson, David F., 4,219,303, Cl. 415-7.000.

Thompson, Johnnie W. Protective crutch nut. 4,219,037, Cl. 135-69.000.

Thompson, Raymond, to United States Borax & Chemical Corporation. Production of bone china. 4,219,360, Cl. 106-45.000.

Thompson, Robert B.: *See*—
Fortunko, Christopher M.; Vasile, Carmine F.; and Thompson, Robert B., 4,218,924, Cl. 73-642.000.

Thompson, Robert L.: *See*—
Wilkes, Arthur L.; Wade, Fred B.; and Thompson, Robert L., 4,219,695, Cl. 179-1.00P.

Thomson-CSF: *See*—
Gailland, Gilbert, 4,219,143, Cl. 228-159.000.

Thomson, John T; and Johnston, Roy C., to Texas Instruments Incorporated. Internal passive air release control apparatus in seismic air gun. 4,219,098, Cl. 181-120.000.

Thun, Dieter, to Ruberoidwerke Aktiengesellschaft. Bituminous roofing and sealing web with fiber containing insert. 4,219,603, Cl. 428-246.000.

Tillmanns, Harald: *See*—
Pietzka, Gerhard; Tillmanns, Harald; and Romey, Ingo, 4,219,405, Cl. 208-50.000.

Times Corporation: *See*—
Schwarzschild, Jack; Willis, Alan E.; and Wilson, Scott P., 4,219,809, Cl. 340-785.000.

Times Fiber Communications, Inc.: *See*—
Dabby, Franklin W.; and Chesler, Ronald B., 4,219,274, Cl. 356-244.000.

Tokai TRW & Co. Ltd.: *See*—
Kumagai, Seiichiro; Abe, Michio; and Maeda, Naoyuki, 4,219,001, Cl. 123-169.0EL.

Tokar, Vladimir A.; Zubik, Maria I.; Baklanov, Grigory M.; Matygin, Nikolai F.; Ustinov, Valentin S.; Kolesnikov, Anatoly V.; Gashenko, Stanislav I.; Rogatkin, Alexandr A.; Khlopkov, Leonid P.; Mikheeva, Vera I.; Lekalova, Lidia I.; Drepin, Nikolai F.; Feofanov, Lev P.; Khodotova, Nina E.; Shevchenko, Ivan I.; Telina, Larisa A.; Garmash, Vladimir I.; and Frantsevich, Andrei M. Process for the preparation of Portland cement clinker. 4,219,363, Cl. 106-100.000.

Tokico Ltd.: *See*—
Hayashida, Yoshihiro, 4,219,243, Cl. 303-6.00C.
Nagase, Toshiro, 4,219,190, Cl. 267-65.00R.

Toko Kabushiki Kaisha: *See*—
Naokawa, Toyoziro, 4,219,781, Cl. 330-254.000.

Tokyo Sanyo Electric Co., Ltd.: *See*—
Noma, Kouichi; Umeda, Tsutomu; and Ogushi, Tsuneo, 4,219,598, Cl. 428-161.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Kobayashi, Yoshiuki; and Rokutanda, Takashi, 4,219,883, Cl. 365-189.000.

Tokyo Shibaura Electric Co., Ltd.: *See*—
Mizutani, Hiroyuki; and Uehara, Toshio, 4,219,876, Cl. 364-414.000.

Toledo Stamping & Manufacturing Company: *See*—
Scheppele, Lyle W., 4,219,132, Cl. 222-16.000.

Tominaga, Anri: *See*—
Mandai, Hiroshi; Tominaga, Anri; Yoshimura, Yoshikazu; and Isa, Hiroshi, 4,219,691, Cl. 585-532.000.

Tomy Kogyo Co., Inc.: *See*—
Iseki, Takeo, 4,218,835, Cl. 35-31.00R.
Saeki, Jiro, 4,219,123, Cl. 213-75.0TC.

Toray Industries, Inc.: *See*—
Taniguchi, Itsuki; Itoh, Ryuichi; Iwatsuki, Toshihiro; and Ohuchi, Shigehiro, 4,219,457, Cl. 260-38.000.

Torii, Sigeru; Tanaka, Hideo; and Ukida, Masashi, to Ouchi Shinko Kagaku Kogyo Kabushiki Kaisha. Process for producing sulfenimides. 4,219,393, Cl. 204-78.000.

Torimaru, Takashi, to Hokushin Electric Works, Ltd. Electromagnetic flowmeter. 4,218,915, Cl. 73-861.160.

Torremans, Joseph: *See*—
Janssens, Frans; Stokbroekx, Raymond; Torremans, Joseph; and Luyckx, Marcel, 4,219,559, Cl. 424-267.000.

Torres, Anibal, to Pfizer Inc. Flour substitutes. 4,219,580, Cl. 426-549.000.

Toshiba Kikai Kabushiki Kaisha: *See*—
Asakura, Kouichi; and Sagara, Makoto, 4,218,825, Cl. 33-174.00Q.
Sakai, Yasuo; Nagashima, Kazuo; and Goto, Harukatsu, 4,218,850, Cl. 51-49.000.

Towmotor Corporation: *See*—
Leskovec, Edward V., 4,219,302, Cl. 414-635.000.

Toyama Chemical Company, Limited: *See*—
Saikawa, Isamu; Takano, Shuntaro; Yoshida, Chosaku; Takashima, Okuta; Momonoi, Kaishu; Kuroda, Seietsu; Komatsu, Miwako; Yasuda, Takashi; and Kodama, Yutaka, 4,219,554, Cl. 424-250.000.

Toyo Engineering Corporation: *See*—
Konoki, Keizo; and Nozawa, Shinkichi, 4,219,492, Cl. 260-449.500.

Toyo Kogyo Co., Ltd.: *See*—
Sato, Haruhiko; Shibagaki, Masao; and Ueda, Tadakazu, 4,219,003, Cl. 123-210.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Inada, Masami; Ito, Shoji; Kitamura, Kazuhiko; and Harada, Toshiro, 4,219,250, Cl. 339-15.000.
Ushijima, Fumihiro; Fukumura, Kagenori; and Ito, Keiichi, 4,219,109, Cl. 192-87.130.

Tozaki, Eishun: *See*—
Oda, Shinichi; Aoyagi, Shoji; Kuroda, Takio; and Tozaki, Eishun, 4,219,220, Cl. 282-27.500.

Traex Corporation: *See*—
Wenkman, Gregory J.; and Filipowicz, Edwin A., 4,219,130, Cl. 221-202.000.

Transnucleaire, Societe pour les Transports de l'Industrie Nucleaire: *See*—
Blum, Paul, 4,219,735, Cl. 250-507.000.

Treptow, Wolfram; Wunsch, Gerd; Kiener, Volker; Meyer, Hermann; and Csizi, Gotthard, to BASF Aktiengesellschaft. Electrolysis cell. 4,219,400, Cl. 204-266.000.

Tressel, Willard. Stringed instrument. 4,218,951, Cl. 84-294.000.

Tri State Oil Tool Industries, Inc.: *See*—
Johnson, Gary R., 4,219,087, Cl. 175-65.000.

Tri-Steel Fabricators Ltd.: *See*—
Legler, Steve, 4,218,858, Cl. 52-165.000.

Triad & Associates, Inc.: *See*—
Triplett, William C.; Brauer, Walter H.; Burke, Robert; and Morrow, Richard, 4,218,923, Cl. 73-623.000.

Triplett, William C.; Brauer, Walter H.; Burke, Robert; and Morrow, Richard, to Triad & Associates, Inc. System for monitoring the condition of a pipeline. 4,218,923, Cl. 73-623.000.

Tritenne, Claude. Bicycle crank unit. 4,218,931, Cl. 474-165.000.

Tropea, Amilcare R., to Lang Jewelry Company. Pierced earring with adjustable ornament. 4,218,894, Cl. 63-13.000.

Trouiller, Jean-Claude, to Schlumberger Technology Corporation. Acoustic transducer. 4,219,095, Cl. 181-104.000.

Trutzschler GmbH & Co. Kg.: *See*—
Trutzschler, Hermann, 4,219,289, Cl. 406-70.000.

Trutzschler, Hermann, to Trutzschler GmbH & Co. Kg. Arrangement for loading a card. 4,219,289, Cl. 406-70.000.

TRW Inc.: *See*—
Miller, Laurence L.; and Hilt, Terry E., 4,219,313, Cl. 418-2.000.

Tsang, Floris Y.: *See*—
Anand, Joginder N.; Revak, Timothy T.; and Tsang, Floris Y., 4,219,613, Cl. 429-104.000.

Tschunt, Edgar, to Siemens Aktiengesellschaft. X-Ray diagnostic apparatus producing transverse layer images. 4,219,733, Cl. 250-445.00T.

Tsuchiya, Fujio; Yamamoto, Kenzo; Yamaguchi, Katsunobu; and Okagami, Akio, to JGC Corporation; and Orient Kagaku Kogyo K.K. Method of treating mother liquor of reaction in terephthalic acid production. 4,219,669, Cl. 562-486.000.

Tsuchiya, Shigekatsu: *See*—
Inazuka, Shinichi; and Tsuchiya, Shigekatsu, 4,219,570, Cl. 424-343.000.

Tsukui, Kunitsugu, to Hitachi, Ltd. Apparatus with rotary inclined storage cells. 4,219,297, Cl. 414-276.000.

Tucker, John T. Amphibious walking vehicle. 4,218,988, Cl. 440-113.000.

Turner, Larry G.: *See*—
Crawford, Dennis W.; and Turner, Larry G., 4,218,785, Cl. 4-203.000.
Crawford, Dennis W.; and Turner, Larry G., 4,219,184, Cl. 251-297.000.

Tutschek, Ernst; and Sbaschnigg, Johann, to Maschinenfabrik Andritz Aktiengesellschaft. Compression rollers for dehydration equipment. 4,218,970, Cl. 100-153.000.

Tyner, Clifford A.; and Westbrook, Dean L. Method for handling dual in-line packages. 4,219,053, Cl. 140-147.000.

Tyton Seal, Inc.: *See*—
Koch, Rudolf, 4,219,202, Cl. 277-93.0SD.

Ubukata, Hirohiko. Wafer probe apparatus with pneumatic wafer orienting mechanism. 4,219,110, Cl. 198-380.000.

Uchida, Yasuo, to Konishiroku Photo Industry Co., Ltd. Device for electronic-flash proximity photography. 4,219,268, Cl. 354-293.000.

Uchidoi, Masanori: *See*—
Date, Nobuaki; Uchidoi, Masanori; Aizawa, Hiroshi; Shimizu, Masami; and Takishima, Yoshiyuki, 4,219,260, Cl. 354-23.00D.

Uchiyama, Yasuji: *See*—
Nakada, Akira; Aoki, Eiichiro; Oya, Akiyoshi; Okumura, Takatoshi; Uchiyama, Yasuji; and Yamaga, Eiichi, 4,218,948, Cl. 84-1.010.

Udall, Humfrey N.: *See*—
Rudd, Wallace C.; and Udall, Humfrey N., 4,219,722, Cl. 219-123.000.

Uebayashi, Takeo: *See*—
Sato, Kunihiko; Urata, Tetsuro; Asamoto, Tetsuhiro; Asakawa, Kobun; Uebayashi, Takeo; and Taguchi, Haruo, 4,219,718, Cl. 219-69.00M.

Ueda, Tadakazu: *See*—
Sato, Haruhiko; Shibagaki, Masao; and Ueda, Tadakazu, 4,219,003, Cl. 123-210.000.

Uehara, Toshio: *See*—
Mizutani, Hiroyuki, and Uehara, Toshio, 4,219,876, Cl. 364-414.000.

Ueno, Masayuki; Sagae, Makoto; and Sano, Fumiaki, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Device for sampling gases in blast furnace. 4,218,918, Cl. 73-421.5R.

Uetrecht, Dale M., to Baldwin Piano & Organ Company. Active ladder filter for voicing electronic musical instruments. 4,218,950, Cl. 84-1.190.

Ufferfilge, Roger K., to Seaquist Valve Company. Foam spout. 4,219,135, Cl. 222-402.130.

Uhl, Robert J.; and Schwarz, Alexander A., to Dennison Manufacturing Company. Segmented character actuation system for rotating print wheel. 4,218,971, Cl. 101-35.000.

Ukida, Masashi: *See*—
Torii, Sigeru; Tanaka, Hideo; and Ukida, Masashi, 4,219,393, Cl. 204-78.000.

Umeda, Tsutomu: *See*—
Noma, Kouichi; Umeda, Tsutomu; and Ogushi, Tsuneo, 4,219,598, Cl. 428-161.000.

Umezawa, Hamao; Takeuchi, Tomio; Naganawa, Hiroshi; Ishizuka, Masaaki; Shibamoto, Norio; Oki, Toshikazu; and Inui, Taiji, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. Process for producing antibiotics MA 144-M_1 and MA 144-M_2. 4,219,622, Cl. 435-78.000.

Underwood, Herbert N., to Borg-Warner Corporation. Flow control valve. 4,218,957, Cl. 91-421.000.

Uniflex S.p.A.: *See*—
Brusadin, Giacomo, 4,219,222, Cl. 285-8.000.

Union Carbide Corporation: *See*—
Chiu, Herman S., 4,219,574, Cl. 426-135.000.
Smith, Derek R.; and Worgan, Gordon P., 4,218,895, Cl. 64-1.00S.

Union Oil Company of California: *See*—
Young, Donald C., 4,219,347, Cl. 71-11.000.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See*—
Gray, George M.; Kelly, Stephen M.; McDonnell, Damien G.; and Mosley, Alan, 4,219,256, Cl. 350-346.000.
Raynes, Edward P., 4,219,255, Cl. 350-346.000.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Energy in Her Britannic Majesty's Government of the: *See*—
Knibbs, Richard H.; and Wood, Dennis, 4,219,421, Cl. 210-98.000.

United States Borax & Chemical Corporation: *See*—
Thompson, Raymond, 4,219,360, Cl. 106-45.000.

United States Gypsum Company: *See*—
Nelson, David M., 4,218,848, Cl. 49-503.000.

United States of America
Agriculture: *See*—
Kadan, Ranjit S.; Ziegler, George M., Jr.; and Spadaro, James J., 4,219,469, Cl. 260-123.500.
Klun, Jerome A.; Plimmer, Jack R.; Bierl-Leonhardt, Barbara A.; and Sparks, Alton N., 4,219,542, Cl. 424-84.000.

Air Force: *See*—
Gibbons, Martin D.; and Aldrich, Richard W., 4,219,845, Cl. 358-105.000.
Hersman, Michael S., 4,219,745, Cl. 307-358.000.
Jaggars, Jamy L., 4,219,039, Cl. 137-38.000.
Lohmann, Arthur M., 4,218,928, Cl. 74-3.520.

Army: *See*—
Antesberger, Edward A., 4,218,912, Cl. 73-1.00E.
Chester, Arthur N., 4,219,786, Cl. 331-94.50C.
Ciocan, Benjamin, 4,219,229, Cl. 296-43.000.
Heinemann, Robert W., 4,218,974, Cl. 102-8.000.
Kalmus, Henry P., 4,218,977, Cl. 102-214.000.
Rittenbach, Otto E., 4,219,812, Cl. 343-7.300.
Weiss, Gerald; Scharf, Gerson; Guido, Anthony A.; and Lazardwitz, Benjamin, 4,219,891, Cl. 455-1.000.

Energy: *See*—
Frantz, Charles E.; Alexander, William K.; and Lander, Walter E. B., 4,218,908, Cl. 72-302.000.
Sisemore, Clyde J., 4,219,237, Cl. 299-2.000.

National Aeronautics and Space Administration; administrator; with respect to an invention of:
Bellavia, John, Jr.; and Kane, John O. Thermal barrier pressure seal. 4,219,203, Cl. 277-181.000.
David-Malig, Manuel A. Method and tool for machining a transverse slot about a bore. 4,218,941, Cl. 82-1.00C.
Ford, Allen G. Speed control device for a heavy duty shaft. 4,219,107, Cl. 188-134.000.
Gray, Norris C.; Senseny, Robert M.; and Bolton, Philip N. Fire extinguishing apparatus having a slidable mass for a penetrator nozzle. 4,219,084, Cl. 169-70.000.
Lund, Gordon F. Subcutaneous electrode structure. 4,219,027, Cl. 128-642.000.
Stephens, James B. Low cost cryostat. 4,218,892, Cl. 62-514.00R.

National Aeronautics and Space Administration: *See*—
Oran, William A.; Berge, LeRoy H.; Reiss, Donald A.; and Johnson, Jerry L., 4,218,921, Cl. 73-505.000.
Rudmann, Arthur A., 4,219,171, Cl. 244-161.000.

Navy: *See*—
Anderson, William B., 4,219,886, Cl. 367-87.000.
Cziesla, Manfred J.; and Mueller, Kurt F., 4,219,374, Cl. 149-75.000.
Gotzmer, Carl, Jr., 4,219,490, Cl. 260-439.0CY.
Larrimore, Herbert, 4,219,871, Cl. 362-264.000.
Martini, Leonard J., 4,219,045, Cl. 137-899.200.
Medwin, Herman, 4,219,888, Cl. 367-131.000.
Moore, Loyd C.; and Hecker, Klaus J., 4,219,817, Cl. 343-17.1PF.
Park, Robert H.; Klas, Harold W.; and Estes, Nelson N., 4,218,987, Cl. 114-245.000.
Parssinen, Edwin J.; White, John F.; and Baron, Sidney, 4,219,889, Cl. 367-158.000.
Ream, Donald F., 4,218,975, Cl. 102-18.00M.
Routh, Claude C.; Geren, Keith E.; Huisveld, Peter, Jr.; and Papineau, Milton D., 4,219,885, Cl. 367-1.000.

U.S. Philips Corporation: *See*—
Auphan, Michel J., 4,219,846, Cl. 358-112.000.
David, Gerard R., 4,219,368, Cl. 136-89.0MS.
Holster, Peter L.; and Ooms, Adam, 4,219,321, Cl. 425-384.000.
Janssen, Peter J. H.; Kolk, Hendrik; and Christis, Wilhelmus J., 4,219,849, Cl. 358-197.000.
Millns, John K.; and Weeks, Clive, 4,219,743, Cl. 307-270.000.

United Technologies Corporation: *See*—
Anderson, David W.; King, William H.; and Malley, David R., 4,219,592, Cl. 427-405.000.
Breault, Richard D., 4,219,611, Cl. 429-13.000.

University of California, The Regents of the: *See*—
Arulanandan, Kandiah, 4,219,776, Cl. 324-323.000.

University Patents, Inc.: *See*—
Goldberg, Leon I.; Cannon, Joseph G.; and Long, John P., 4,219,568, Cl. 424-330.000.

Uno, Motoo; and Izumi, Hisashi, deceased (by Izumi, Reiko, Junichi Izumi, Seiji Izumi, administrators), to Hitachi, Ltd. Method and device for controlling a shock absorber. 4,218,956, Cl. 91-363.00R.

UOP Inc.: *See*—
Baumann, William M., 4,219,521, Cl. 264-141.000.
Heling, Dennis H., 4,219,235, Cl. 297-417.000.
Imai, Tamotsu, 4,219,684, Cl. 568-909.000.
Markfelt, Reinhold S., 4,219,773, Cl. 324-221.000.
Vickers, Anthony G., 4,219,442, Cl. 252-417.000.
Withers, James G., Jr., 4,219,078, Cl. 165-133.000.

Upjohn Company, The: *See—*
Bundy, Gordon L.; and Nelson, Norman A., 4,219,662, Cl. 560-53.000.
Desposato, Francis E.; and Hessler, Edward J., 4,219,641, Cl. 536-9.000.
Glenn, Eldridge M., 4,219,569, Cl. 424-331.000.

Urata, Tetsuro: *See—*
Sato, Kunihiko; Urata, Tetsuro; Asamoto, Tetsuhiro; Asakawa, Kobun; Uebayashi, Takeo; and Taguchi, Haruo, 4,219,718, Cl. 219-69.00M.

Ushijima, Fumihiro; Fukumura, Kagenori; and Ito, Keiichi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Oil pressure control means for an automatic transmission. 4,219,109, Cl. 192-87.130.

Ustinov, Valentin S.: *See—*
Tokar, Vladimir A.; Zubik, Maria I.; Baklanov, Grigory M.; Matygin, Nikolai F.; Ustinov, Valentin S.; Kolesnikov, Anatoly V.; Gashenko, Stanislav I.; Rogatkin, Alexandr A.; Khlopkov, Leonid P.; Mikheeva, Vera I.; Lekalova, Lidia I.; Drepin, Nikolai F.; Feofanov, Lev P.; Khodotova, Nina E.; Shevchenko, Ivan I.; Telina, Larisa A.; Garmash, Vladimir I.; and Frantsevich, Andrei M., 4,219,363, Cl. 106-100.000.

Usui, Koichi: *See—*
Sugahara, Yujiro; Usui, Koichi; Ogawa, Masahide; Kurosaki, Hideaki; and Imafuku, Shigehisa, 4,219,535, Cl. 423-328.000.

Usui Kokusai Sangyo Kabushiki Kaisha: *See—*
Usui, Masayoshi, 4,218,996, Cl. 123-90.610.

Usui, Masayoshi, to Usui Kokusai Sangyo Kabushiki Kaisha. Valve moving push rod for internal combustion engines and method of making the same. 4,218,996, Cl. 123-90.610.

Utex Industries, Inc.: *See—*
Pippert, Frederick B., 4,219,204, Cl. 277-188.00A.

Vaerewyck, Eugene G.: *See—*
Yaroshuk, Nick; Sarkozi, Miklos; and Vaerewyck, Eugene G., 4,219,277, Cl. 356-431.000.

Vakil, Himanshu B.; and Flock, John W., to General Electric Company. Vapor compression cycle device with multi-component working fluid mixture and improved condensing heat exchanger. 4,218,890, Cl. 62-114.000.

Valek, Robert J., to Motorola, Inc. Dual slide switch voltage encoder. 4,219,801, Cl. 340-347.0DA.

Valkama, Erkki: *See—*
Surakka, Jorma; Pokkinen, Martti; Makkonen, Jorma; Valkama, Erkki; Karkkainen, Viljo; Rabina, Pekka; and Matula, Jouni, 4,219,166, Cl. 241-246.000.

Valkama, Paavo J. Press section of a paper machine. 4,219,383, Cl. 162-360.00R.

Vallee, Louis L. Metal shingle roof modern design. 4,218,857, Cl. 52-94.000.

Valsvik, Donald J., to Conwed Corporation. Acoustic space divider. 4,219,101, Cl. 181-286.000.

Vandale, Leonard A.; and Winslow, Douglas L., to Goodyear Tire & Rubber Company, The. Making bead rings for vehicle tires. 4,219,375, Cl. 156-136.000.

van der Lely, Cornelis. Overload couplings. 4,218,896, Cl. 64-28.00R.

van der Lely, Cornelis. Soil cultivating implements. 4,219,086, Cl. 172-59.000.

Vanerskog AB: *See—*
Lindstrom, Nils E., 4,219,056, Cl. 144-3.00P.

Van Heel, Joannes M., to Stichting Bouwcentrum. Method and apparatus for utilizing solar heat. 4,219,010, Cl. 126-430.000.

Van Hijfte, Willy H. P.: *See—*
Niks, Anton; Van Hijfte, Willy H. P.; and Goethals, Rafael A. J., 4,219,589, Cl. 427-213.000.

van Loon, Paul G. G.; Altiery, Anthony S.; and Kay, Steeve T. S., to Siliconix, Inc. VMOS Mesa structure and manufacturing process. 4,219,835, Cl. 357-55.000.

Van Weelden, Marvin: *See—*
Bergan, Norman A.; Walker, Robert G.; and Van Weelden, Marvin, 4,219,165, Cl. 241-93.000.

Varian Associates, Inc.: *See—*
Karp, Arthur, 4,219,758, Cl. 315-3.600.

Varma, Ravi K., to E. R. Squibb & Sons, Inc. Process for preparing steroidal [16α,17-b]naphthaleno-21-carboxylic acid esters. 4,219,488, Cl. 260-397.100.

Vasile, Carmine F.: *See—*
Fortunko, Christopher M.; Vasile, Carmine F.; and Thompson, Robert B., 4,218,924, Cl. 73-642.000.

Vasishth, Ramesh C., to Cor Tech Research Ltd. Control of procedures for formation of water-immiscible thermosetting phenol-formaldehyde resins. 4,219,634, Cl. 528-139.000.

Vaughan, Ronald J., to Chevron Research Company. Mannich base composition. 4,219,430, Cl. 252-42.700.

Vax Appliances Limited: *See—*
Brazier, Alan J., 4,218,805, Cl. 15-321.000.

Velenyi, Louis J.: *See—*
Dolhyj, Serge R.; and Velenyi, Louis J., 4,219,687, Cl. 585-267.000.

Venkatram, Ramdas; Kamath, Vasanth R.; and Smith, Chester J., to Pennwalt Corporation. Batch process for manufacturing and purifying liquid organic peroxide by distillation. 4,219,675, Cl. 568-563.000.

Ventus Energy Corp.: *See—*
Bottrell, Gerald W., 4,219,308, Cl. 416-43.000.

Verbatim Corporation: *See—*
Majicek, Stepan, 4,219,169, Cl. 242-192.000.

Verbrugge, Pieter A.; and Kramer, Petrus A., to Shell Oil Company. Preparation of 2-(2-acetyl-3-oxobutyl)-3,3-dimethylcyclopropanecarbaldehyde. 4,219,504, Cl. 568-365.000.

Vereinigte Baubeschlagfabriken Gretsch & Co. GmbH: *See—*
Biermann, Peter; Ewald, Otto; Feucht, Rudi; and Schmidt, Manfred, 4,219,215, Cl. 280-615.000.

Vetco Inc.: *See—*
Schulte, Clarence A., 4,219,223, Cl. 285-26.000.

Vickers, Anthony G., to UOP Inc. Fluid coke contaminated catalyst regeneration process. 4,219,442, Cl. 252-417.000.

Victor Company of Japan Limited: *See—*
Watanabe, Yasuaki, 4,219,839, Cl. 358-27.000.

Virag, Sandor: *See—*
Knoll, Josef; Meszaros, Zoltan; Hermecz, Istvan; Fulop, Ferenc; Bernath, Gabor; Virag, Sandor; Nagy, Gabor; and Szentmiklosi, Peter, 4,219,649, Cl. 544-282.000.

Visual Systems Corporation: *See—*
Gagnon, Richard T.; and Horste, Stephen C., 4,219,737, Cl. 250-570.000.

Vitolin, Rasma O.: *See—*
Kastron, Valeria V.; Vitolin, Rasma O.; Fialkov, Jury A.; Shelyazhenko, Svetlana V.; Dubur, Gunar Y.; Kimenis, Agris A.; and Yagupolsky, Lev M., 4,219,653, Cl. 546-322.000.

Vladimirov, Evgeny E.; Korchagin, Vladimir G.; Sadomov, Jury B.; and Khokhlov, Lev M. Special-purpose digital computer for statistical data processing. 4,219,877, Cl. 364-554.000.

VLSI Technology Research Association: *See—*
Migitaka, Masatoshi; and Mizukami, Koichiro, 4,219,731, Cl. 250-310.000.

Voith Transmit GmbH: *See—*
Lindenthal, Hans, 4,219,286, Cl. 403-338.000.

Volat, Jean P., to Hotchkiss-Brandt Sogeme H.B.S. Device for marking articles. 4,219,281, Cl. 400-126.000.

Volkswagenwerk Aktiengesellschaft: *See—*
Danckert, Hermann; and Willmann, Michael, 4,219,002, Cl. 123-198.00E.

Von Bank, James: *See—*
Engelmann, Rudolph H., 4,219,872, Cl. 363-126.000.

Von Gunten, Lee L. Random timer apparatus. 4,219,741, Cl. 307-141.000.

Vorbruggen, Helmut; Skuballa, Werner; Raduchel, Bernd; Losert, Wolfgang; Loge, Olaf; Muller, Bernd; and Mannesmann, Gerda, to Schering Aktiengesellschaft. 5-Cyano-prostacyclin derivatives. 4,219,479, Cl. 424-263.000.

Voss, Houston F.: *See—*
Plattner, Jacob J.; Stroupe, Stephen D.; and Voss, Houston F., 4,219,497, Cl. 260-501.140.

Waaske, Heinz, to Rollei-Werke Franke & Heidecke. Photographic view finder camera with retractable lens tube. 4,219,265, Cl. 354-187.000.

WABCO Westinghouse S.p.A.: *See—*
Careglio, Giuseppe; Restori, Ettore; and Pecorini, Marcello, 4,219,071, Cl. 165-23.000.

Waddill, Harold G.; and Schulze, Heinz, to Texaco Development Corporation. Polyether diureide epoxy additives. 4,219,638, Cl. 528-421.000.

Wade, Fred B.: *See—*
Wilkes, Arthur L.; Wade, Fred B.; and Thompson, Robert L., 4,219,695, Cl. 179-1.00P.

Waggoner, Van E., to Deere & Company. Lock mechanism for service brake. 4,218,936, Cl. 74-512.000.

Wagner Electric Corporation: *See—*
Griner, Paul K.; and Fleagle, Joseph E., 4,219,244, Cl. 303-92.000.

Wagner, Kuno, to Bayer Aktiengesellschaft. Process for the preparation of low molecular weight polyhydroxyl compounds. 4,219,508, Cl. 568-387.000.

Wakui, Yoko: *See—*
Mochizuki, Yasuhiro; Hachino, Hiroaki; Misawa, Yutaka; and Wakui, Yoko, 4,219,373, Cl. 148-187.000.

Waldon, Chester L. Halter type cover for car front protection. 4,219,218, Cl. 280-770.000.

Walker, Robert G.: *See—*
Bergan, Norman A.; Walker, Robert G.; and Van Weelden, Marvin, 4,219,165, Cl. 241-93.000.

Wallshein, Melvin. Ceramic orthodontic bracket. 4,219,617, Cl. 433-8.000.

Walter, Oskar: *See—*
Wolfers, Heinrich; Walter, Oskar; Rudolph, Hans; and Rosenkranz, Hans J., 4,219,674, Cl. 568-559.000.

Walton, Ronald O., to Libbey-Owens-Ford Company. Glass melting furnace structure. 4,219,326, Cl. 432-247.000.

Watanabe, Yasuaki, to Victor Company of Japan Limited. Amplitude comparator with a differential amplifier. 4,219,839, Cl. 358-27.000.

Watson, James C. Apparatus for unwrapping bread. 4,219,299, Cl. 414-412.000.

Weaver, William N.; Olsen, Robert C.; and Klygis, Mindaugas J., to Illinois Tool Works Inc. Multipackaging device. 4,219,117, Cl. 206-150.000.

Webasto-Werk W. Baier GmbH & Co.: *See—*
Igel, Richard, 4,219,231, Cl. 296-218.000.

Webb, William M., to General Electric Company. Coupling for rejoining sealed tubing. 4,219,221, Cl. 285-3.000.

Weber, Harold J. Vehicular signal apparatus. 4,219,799, Cl. 340-52.00R.

Webinger, George: *See—*
Jaeschke, Harold R.; Patmore, Thomas R.; and Webinger, George, 4,219,145, Cl. 229-8.000.

Weeden, George: *See—*
Roulston, John F.; and Weeden, George, 4,219,780, Cl. 330-52.000.

Weeks, Clive: *See*—
Millns, John K.; and Weeks, Clive, 4,219,743, Cl. 307-270.000.

Weemes, Doyle A.; and Seymour, Robert W., to Eastman Kodak Company. Molding composition from polyester blends. 4,219,628, Cl. 525-166.000.

Wehrli, Pius A., to Hoffmann-La Roche Inc. Conjugated diene derivatives. 4,219,660, Cl. 560-20.000.

Weikel, Donald J., Jr.; and Bernhard, John S., to Xerox Corporation. Reproducing apparatus. 4,219,270, Cl. 355-3.00R.

Weikert, Norbert B.; Tekathen, Hans; and Schulte, Heinrich, to Krampe & Co. Mining auger. 4,219,239, Cl. 299-81.000.

Weinert, Fritz K., to Weinschel Engineering Co., Inc. Insertion loss and phase shift measurement system and method. 4,219,770, Cl. 324-58.00A.

Weinschel Engineering Co., Inc.: *See*—
Weinert, Fritz K., 4,219,770, Cl. 324-58.00A.

Weischedel, Richard C., to General Electric Company. Sensor for electromagnetic waves caused by nuclear detonation. 4,219,804, Cl. 340-600.000.

Weiss, Allen, to Alamar Associates. Trophy base. 4,219,176, Cl. 248-188.100.

Weiss, Gerald; Scharf, Gerson; Guido, Anthony A.; and Lazardwitz, Benjamin, to United States of America, Army. Countermeasures system. 4,219,891, Cl. 455-1.000.

Weiss, Martin J., to American Cyanamid Company. 15,16-Dioxy prostenoic acids and esters. 4,219,664, Cl. 560-121.000.

Weiss, Martin J.: *See*—
Grudzinskas, Charles V.; and Weiss, Martin J., 4,219,496, Cl. 260-464.000.

Weitz, Hans-Martin: *See*—
Platz, Rolf; Weitz, Hans-Martin; and Hartig, Juergen, 4,219,666, Cl. 560-246.000.

Weller, Peter A.: *See*—
Scrivo, Jerry V.; and Weller, Peter A., 4,219,189, Cl. 267-8.00R.

Wellman Thermal Systems Corporation: *See*—
Taylor, Albert M., 4,219,692, Cl. 13-25.000.

Welsch, Wolfgang: *See*—
Rech, Werner; Welsch, Wolfgang; and Zimlich, Josef, 4,219,757, Cl. 313-220.000.

Wemmer, Otto. Particulate spray nozzle with diffuser. 4,218,855, Cl. 51-439.000.

Wenkman, Gregory J.; and Filipowicz, Edwin A., to Traex Corporation. Dispensing unit for elongated articles. 4,219,130, Cl. 221-202.000.

Wenning, G. Thomas: *See*—
Esch, Ronald P.; Folsom, Robert M.; Liu, Cheng-Yih; Rideout, Vincent L.; Soderman, Donald A.; and Wenning, G. Thomas, 4,219,834, Cl. 357-41.000.

Werner, Wolfgang: *See*—
Guthlein, Werner; Wielinger, Hans; Rittersdorf, Walter; and Werner, Wolfgang, 4,219,336, Cl. 23-230.00B.

Wescom, Inc.: *See*—
Nilssen, Albert G.; and Hermanson, Spencer L., 4,219,699, Cl. 179-16.0AA.

Wescott, Kermit R.: *See*—
Kiscaden, Roy W.; and Wescott, Kermit R., 4,218,878, Cl. 60-39.09R.

Wesner, Walter H., to AFA Corporation, The. Foam device. 4,219,159, Cl. 239-343.000.

West, Robert D. Camera for use in a telescope. 4,219,263, Cl. 354-79.000.

West, Walter H.; and Prueter, E. D., to Dow Chemical Company, The. Plug valve and method. 4,219,046, Cl. 137-375.000.

Westbrook, Dean L.: *See*—
Tyner, Clifford A.; and Westbrook, Dean L., 4,219,053, Cl. 140-147.000.

Westinghouse Electric Corp.: *See*—
Bozanic, Donald A.; Mergerian, Dickron; and Minarik, Ronald W., 4,219,775, Cl. 324-313.000.
Butler, John M., III, 4,219,746, Cl. 310-61.000.
Detering, Richard L., 4,219,784, Cl. 331-27.000.
Dixon, George D., 4,219,366, Cl. 134-4.000.
Emmerich, Werner S., 4,219,712, Cl. 200-148.00A.
Harris, Robert D.; and Haderer, Norman G., 4,218,831, Cl. 34-4.000.
John, Clarence D., Jr., 4,218,920, Cl. 73-422.000.
Kappenhagen, George A., 4,219,226, Cl. 285-354.000.
Kiscaden, Roy W.; and Wescott, Kermit R., 4,218,878, Cl. 60-39.09R.
Maier, Alfred E.; and Ricci, Louis N., 4,219,713, Cl. 200-153.00G.
Meyer, Thomas N.; and Wolf, Charles B., 4,219,726, Cl. 219-383.000.
Moore, Curtis L.; and Seidel, Martin P., 4,219,791, Cl. 336-58.000.
Yaroshuk, Nick; Sarkozi, Miklos; and Vaerewyck, Eugene G., 4,219,277, Cl. 356-431.000.

Weston, Norma A., to American Cyanamid Company. Composition for marking and identification purposes. 4,219,438, Cl. 252-301.350.

Wetzel, William L.: *See*—
Surowitz, Philip; and Wetzel, William L., 4,219,600, Cl. 428-196.000.

Wheelock, Kenneth S., to Exxon Research & Engineering Co. Catalyst and a process for its preparation. 4,219,447, Cl. 252-466.0PT.

Whirlpool Corporation: *See*—
Mason, Anthony, 4,218,899, Cl. 68-12.00R.

Whitcomb, Rodney J.: *See*—
Tersteeg, Glenn E.; Nosco, Louis C.; Meyer, Robert J.; and Whitcomb, Rodney J., 4,219,529, Cl. 422-65.000.

White, Gordon D., to Bredon Hydraulics Limited. Hydraulic power packs. 4,218,885, Cl. 60-456.000.

White, Gordon D., to Bredon Hydraulics Limited. Hydraulic power packs. 4,218,886, Cl. 60-486.000.

White, Howard L.; and Krolewski, Casimir V., to Ciba-Geigy Corporation. Process for the production of 2-aryl-2H-benzotriazoles. 4,219,480, Cl. 548-260.000.

White, John F.: *See*—
Parssinen, Edwin J.; White, John F.; and Baron, Sidney, 4,219,889, Cl. 367-158.000.

Whitehouse, Martin H., to Byrne & Davidson Doors (N.S.W.) Pty. Limited. Wiring clip. 4,219,174, Cl. 248-71.000.

Whitney, John: *See*—
Allen, David H.; Rogers, Peter R.; and Whitney, John, 4,218,933, Cl. 74-422.000.

Wiegand, Henry, to Gould Inc. Protector circuit for solenoid operator. 4,219,861, Cl. 361-106.000.

Wielinger, Hans: *See*—
Guthlein, Werner; Wielinger, Hans; Rittersdorf, Walter; and Werner, Wolfgang, 4,219,336, Cl. 23-230.00B.

Wiesner, Alfredo. Metering-distributors for bottled thick liquids for the preparation of beverages. 4,219,134, Cl. 222-129.300.

Wightman, William K. Frame-setting apparatus. 4,218,829, Cl. 33-348.000.

Wilhelm Fette GmbH: *See*—
Stuben, Werner; Eltzschig, Rudolf; and Friedrichs, Konrad, 4,219,320, Cl. 425-345.000.

Wilker, Paul S.: *See*—
Panizzon, Guido; Cepelinski, Jacob; Cowpland, Michael C. J.; and Wilker, Paul S., 4,219,700, Cl. 179-17.00B.

Wilkes, Arthur L.; Wade, Fred B.; and Thompson, Robert L., to International Communication Sciences. Noise estimation system for use in speech analysis. 4,219,695, Cl. 179-1.00P.

William H. Rorer, Inc.: *See*—
Diamond, Julius; and Zalipsky, Jerome J., 4,219,567, Cl. 424-322.000.
Zalipsky, Jerome J.; and Patel, Dahyabhai M., 4,219,474, Cl. 260-156.000.

Williams, Earl V.; and Ostrowski, Diane L. Pre-measured automatic quantity dispensing apparatus and methods of constructing and utilizing same. 4,219,136, Cl. 222-450.000.

Williams, Elbert E., Jr.: *See*—
Ernst, Richard J.; and Williams, Elbert E., Jr., 4,218,795, Cl. 7-158.000.

Williams, Frederick C.: *See*—
Herman, Elvin E.; and Williams, Frederick C., 4,219,811, Cl. 343-5.0CM.

Williams & Lane, Inc.: *See*—
Griesinger, Robert E., 4,219,738, Cl. 290-40.00R.

Williams, Robert L.: *See*—
Growe, Glen H.; and Williams, Robert L., 4,218,780, Cl. 2-199.000.

Willis, Alan E.: *See*—
Schwarzschild, Jack; Willis, Alan E.; and Wilson, Scott P., 4,219,809, Cl. 340-785.000.

Willmann, Michael: *See*—
Danckert, Hermann; and Willmann, Michael, 4,219,002, Cl. 123-198.00E.

Willmerding, Gunter, to Metzeler Kautschuk Aktiengesellschaft. Device for producing hollow molded members. 4,219,317, Cl. 425-145.000.

Willoughby, Robert A.; Law, John P.; and Budziak, Renno W., to Ingersoll-Rand Company. Energy absorbing keyhole slots. 4,218,853, Cl. 51-269.000.

Wilske, Lowell D., to Honeywell Inc. Digital input control circuit. 4,219,881, Cl. 364-900.000.

Wilson, Scott P.: *See*—
Schwarzschild, Jack; Willis, Alan E.; and Wilson, Scott P., 4,219,809, Cl. 340-785.000.

Wilson, Warren M. Control valve assembly. 4,219,044, Cl. 137-340.000.

Wilson, William I. Diamond and cubic boron nitride abrasive compacts and conglomerates. 4,219,339, Cl. 51-307.000.

Wiltshire, Arthur J.; Nara, Harry R.; LeBreton, Edward T.; and Bliley, Ward L., to Structural Fibers, Inc. Tank closure assembly. 4,219,125, Cl. 220-5.00A.

Wimmer, Guenther W., to Tektronix, Inc. System and method of minimizing velocity fluctuations in a synchronous motor shaft. 4,219,767, Cl. 318-696.000.

Wingert, Georg: *See*—
Katz, Klaus; Abt, Reinhold; Bordovsky, Jaromir; Pfundstein, Wolfgang; and Wingert, Georg, 4,218,958, Cl. 91-434.000.

Winslow, Douglas L.: *See*—
Vandale, Leonard A.; and Winslow, Douglas L., 4,219,375, Cl. 156-136.000.

Wisniewski, Gerald A. Smoke diffusing device. 4,219,531, Cl. 422-124.000.

Wissbrun, Kurt F.: *See*—
Edelman, Robert; Berardinelli, Frank M.; and Wissbrun, Kurt F., 4,219,527, Cl. 264-540.000.

Withers, James G., Jr., to UOP Inc. Heat transfer surface for nucleate boiling. 4,219,078, Cl. 165-133.000.

Wittwer, Alvin L.: *See*—
Fathergill, Rex D.; and Wittwer, Alvin L., 4,219,823, Cl. 346-75.000.

Witzler, Horst. Cutter assembly for eavestrough-forming machine. 4,218,946, Cl. 83-636.000.
Wolf, Charles B.: *See—*
Meyer, Thomas N.; and Wolf, Charles B., 4,219,726, Cl. 219-383.000.
Wolfers, Heinrich; and Rosenkranz, Hans J., to Bayer Aktiengesellschaft. Accelerators for radical polymerization reactions with initiators free from peroxide groups. 4,219,626, Cl. 525-23.000.
Wolfers, Heinrich; Walter, Oskar; Rudolph, Hans; and Rosenkranz, Hans J., to Bayer Aktiengesellschaft. Peroxide initiators. 4,219,674, Cl. 568-559.000.
Wolfs, Denise Y.; Clavenna, Le Roy R.; Eakman, James M.; and Kalina, Theodore, to Exxon Research & Engineering Co. Hydrothermal alkali metal recovery process. 4,219,338, Cl. 48-197.00R.
Wollensak, John C.; and Lucast, Donald H., to Ethyl Corporation. Process for producing 2,6-dialkylanilines. 4,219,503, Cl. 260-578.000.
Woma-Apparatebau Wolfgang Maasberg & Co. GmbH: *See—*
Maasberg, Wolfgang; and Huperz, Adalbert, 4,218,961, Cl. 92-156.000.
Woo, Gar L., to Chevron Research Company. Sulfur foam process and product. 4,219,364, Cl. 106-122.000.
Wood, Dennis: *See—*
Knibbs, Richard H.; and Wood, Dennis, 4,219,421, Cl. 210-98.000.
Woods, Milton E.: *See—*
Hunsucker, Jerry H.; and Woods, Milton E., 4,219,631, Cl. 525-398.000.
Woo[illegible] Cyril: *See—*
Mares, Frank; Oxenrider, Bryce C.; and Woolf, Cyril, 4,219,625, Cl. 525-5.000.
Worgan, Gordon P.: *See—*
Smith, Derek R.; and Worgan, Gordon P., 4,218,895, Cl. 64-1.00S.
Workman, Carl J. Pollution control system. 4,219,342, Cl. 55-222.000.
Wright, George R. Syringe filling aid. 4,219,055, Cl. 141-27.000.
Wright, Norman D. Plate bender. 4,218,909, Cl. 72-320.000.
Wu, Yulin, to Phillips Petroleum Company. Isomerization of unsaturated alcohols. 4,219,683, Cl. 568-906.000.
Wulf, Ronald J.: *See—*
Soldati, Gianluigi; Stitley, James W.; Wulf, Ronald J.; and Jass, Herman E., 4,219,540, Cl. 424-65.000.
Wunsch, Gerd: *See—*
Treptow, Wolfram; Wunsch, Gerd; Kiener, Volker; Meyer, Hermann; and Csizi, Gotthard, 4,219,400, Cl. 204-266.000.
Wurlitzer Company, The: *See—*
Schwartz, Harold O.; and Kidd, Dennis E., 4,218,949, Cl. 84-1.030.
Wyse, Harold G. Muffler for exhaust air or other gas. 4,219,100, Cl. 181-230.000.
Xerox Corporation: *See—*
Scifres, Donald R.; Burnham, Robert D.; and Streifer, William, 4,219,785, Cl. 331-94.50H.
Weikel, Donald J., Jr.; and Bernhard, John S., 4,219,270, Cl. 355-3.00R.
Yagupolsky, Lev M.: *See—*
Kastron, Valeria V.; Vitolin, Rasma O.; Fialkov, Jury A.; Shelyazhenko, Svetlana V.; Dubur, Gunar Y.; Kimenis, Agris A.; and Yagupolsky, Lev M., 4,219,653, Cl. 546-322.000.
Yajima, Kenji: *See—*
Nishida, Isamu; Otani, Tadashi; and Yajima, Kenji, 4,219,756, Cl. 310-348.000.
Yamada, Katsuya: *See—*
Ohsumi, Atushi; Yamagishi, Yoshinao; Daigo, Kaoru; Yamamoto, Tomio; and Yamada, Katsuya, 4,219,844, Cl. 358-106.000.
Yamaga, Eiichi: *See—*
Nakada, Akira; Aoki, Eiichiro; Oya, Akiyoshi; Okumura, Takatoshi; Uchiyama, Yasuji; and Yamaga, Eiichi, 4,218,948, Cl. 84-1.010.
Yamagishi, Yoshinao: *See—*
Ohsumi, Atushi; Yamagishi, Yoshinao; Daigo, Kaoru; Yamamoto, Tomio; and Yamada, Katsuya, 4,219,844, Cl. 358-106.000.
Yamaguchi, Katsunobu: *See—*
Tsuchiya, Fujio; Yamamoto, Kenzo; Yamaguchi, Katsunobu; and Okagami, Akio, 4,219,669, Cl. 562-486.000.
Yamamichi, Masayoshi: *See—*
Suzuki, Masayuki; Yamamichi, Masayoshi; Murakami, Hiroyasu; and Ito, Tadashi, 4,219,267, Cl. 354-289.000.
Yamamoto, Kenzo: *See—*
Tsuchiya, Fujio; Yamamoto, Kenzo; Yamaguchi, Katsunobu; and Okagami, Akio, 4,219,669, Cl. 562-486.000.
Yamamoto, Tomio: *See—*
Ohsumi, Atushi; Yamagishi, Yoshinao; Daigo, Kaoru; Yamamoto, Tomio; and Yamada, Katsuya, 4,219,844, Cl. 358-106.000.
Yamanaka, Seisuke: *See—*
Nishimura, Toshimichi; Yamanaka, Seisuke; and Shimada, Masaru, 4,219,841, Cl. 358-29.000.
Yamato, Yukiomi: *See—*
Kawasaki, Yoichi; Taniguchi, Hitoshi; Yamato, Yukiomi; and Minamiyama, Kyoko, 4,219,576, Cl. 426-262.000.
Yarmukhametov, Azat U.: *See—*
Gusev, Valery F.; Ivanov, Gennady N.; Kontarev, Vladimir Y.; Krengel, Genrikh I.; Polivoda, Evgeny O.; Skvortsov, Alexandr N.; Schetinin, Jury I.; Kremlev, Vyacheslav Y.; Shagivaleev, Mansur Z.; and Yarmukhametov, Azat U., 4,219,874, Cl. 364-200.000.
Yaroshuk, Nick; Sarkozi, Miklos; and Vaerewyck, Eugene G., to Westinghouse Electric Corp. Method of detecting flaws on surfaces. 4,219,277, Cl. 356-431.000.
Yasuda, Takashi: *See—*
Saikawa, Isamu; Takano, Shuntaro; Yoshida, Chosaku; Takashima, Okuta; Momonoi, Kaishu; Kuroda, Seietsu; Komatsu, Miwako; Yasuda, Takashi; and Kodama, Yutaka, 4,219,554, Cl. 424-250.000.
Yasuhara, Mitsuki: *See—*
Miki, Hisaya; and Yasuhara, Mitsuki, 4,219,507, Cl. 568-411.000.
Yeda Research & Development Co. Ltd.: *See—*
Halmann, Martin M., 4,219,392, Cl. 204-72.000.
Yen, Shiao-Ping S.; Rembaum, Alan; and Molday, Robert S., to California Institute of Technology. Cell sorting apparatus. 4,219,411, Cl. 209-213.000.
Yih, Roy Y.: *See—*
Bayer, Horst O.; Swithenbank, Colin; and Yih, Roy Y., 4,219,352, Cl. 71-105.000.
Yokota, Shizuo: *See—*
Nakako, Yukio; and Yokota, Shizuo, 4,219,403, Cl. 208-10.000.
Yolton, Charles F.; and Froes, Francis H., to Crucible Inc. Method for producing powder metallurgy articles. 4,219,357, Cl. 75-221.000.
Yonezawa, Akira: *See—*
Nakagawa, Seiichi; Yonezawa, Akira; and Kikuchi, Masatsugu, 4,219,732, Cl. 250-396.0ML.
Yoshida, Chosaku: *See—*
Saikawa, Isamu; Takano, Shuntaro; Yoshida, Chosaku; Takashima, Okuta; Momonoi, Kaishu; Kuroda, Seietsu; Komatsu, Miwako; Yasuda, Takashi; and Kodama, Yutaka, 4,219,554, Cl. 424-250.000.
Yoshida, Kazuo; and Fukuda, Kunio, to Asahi-Dow Limited. Impact resistant resin containing compositions having reduced flammability. 4,219,466, Cl. 260-45.75B.
Yoshida, Keiichiro. Material tensioning method and apparatus. 4,218,906, Cl. 72-183.000.
Yoshida, Kobun: *See—*
Magata, Yoshihiro; Yoshida, Kobun; and Kato, Itsuo, 4,219,852, Cl. 360-90.000.
Yoshida, Morihiko: *See—*
Oshiro, Susumu; and Yoshida, Morihiko, 4,219,014, Cl. 128-6.000.
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., to International Flavors & Fragrances Inc. 2,2,3-Trimethyl-3-cyclopenten-1-ylalkenyl and alkylidene secondary alcohols in perfume compositions. 4,219,451, Cl. 252-522.00R.
Yoshida, Takuji, to NGK Insulators Ltd.; and Noritake Iron Works Co., Ltd. Filter press. 4,219,425, Cl. 210-225.000.
Yoshikawa, Haruzo: *See—*
Ishida, Shuichi; Yoshikawa, Haruzo; and Morohoshi, Fumio, 4,218,874, Cl. 84-484.000.
Yoshimura, Yoshikazu: *See—*
Mandai, Hiroshi; Tominaga, Anri; Yoshimura, Yoshikazu; and Isa, Hiroshi, 4,219,691, Cl. 585-532.000.
Yoshioka, Takao: *See—*
Soma, Nobuo; Morimura, Syoji; Yoshioka, Takao; and Kurumada, Tomoyuki, 4,219,465, Cl. 260-45.8NT.
Young, Donald C., to Union Oil Company of California. Multicomponent soil supplement. 4,219,347, Cl. 71-11.000.
Yuza, Yasutada: *See—*
Arikawa, Hiroo; Maruo, Masaya; and Yuza, Yasutada, 4,219,794, Cl. 337-292.000.
Zaglio, Sergio; and Marchetti, Luigi, to Internazionale Brevetti S.r.l. Device for indicating a condition of nearly exhausted yarn reserve on a bobbin to stop automatically a hosiery knitting machine. 4,218,897, Cl. 66-163.000.
Zahniser, James A., to C. M. Kemp Manufacturing Company, The. Process for treating metals using recycled gases. 4,219,324, Cl. 432-26.000.
Zahnradfabrik Friedrichshafen AG: *See—*
Lang, Armin, 4,219,093, Cl. 180-131.000.
Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See—*
Umezawa, Hamao; Takeuchi, Tomio; Naganawa, Hiroshi; Ishizuka, Masaaki; Shibamoto, Norio; Oki, Toshikazu; and Inui, Taiji, 4,219,622, Cl. 435-78.000.
Zalipsky, Jerome J.; and Patel, Dahyabhai M., to William H. Rorer, Inc. Heterocyclic phenyl azo hydroxybenzenes. 4,219,474, Cl. 260-156.000.
Zalipsky, Jerome J.: *See—*
Diamond, Julius; and Zalipsky, Jerome J., 4,219,567, Cl. 424-322.000.
Zarow, Merle C. Vibrating dental instrument for setting crowns. 4,219,619, Cl. 433-118.000.
Zefran, Clara M. Decorative cake container. 4,219,119, Cl. 206-457.000.
Zehender, Ernst, to Robert Bosch GmbH. Vehicle headlight with polarized and non-polarized light emission. 4,219,867, Cl. 362-19.000.
Zeidler, Ulrich; and Scheuermann, Fanny, to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA). Polycarboxylic acid-2-hydroxylalkyl esters, their use as emulsifying agents and cosmetic emulsions containing them. 4,219,665, Cl. 560-122.000.
Zeman, Wayne P.: *See—*
Babinsky, Andrew D.; Hora, Charles J.; Peters, Edward J.; and Zeman, Wayne P., 4,219,394, Cl. 204-98.000.
Zenith Radio Corporation: *See—*
Srivastava, Gopal, 4,219,840, Cl. 358-28.000.
Zerver, Hermann-Jochen: *See—*
Hoting, Johann-Peter; Rahn, Armin; and Zerver, Hermann-Jochen, 4,218,828, Cl. 33-334.000.
Zetterlund, Uno: *See—*
Eriksson, Kent; and Zetterlund, Uno, 4,219,792, Cl. 336-60.000.

Zettler, Hans D.: *See*—
Sinn, Richard; Nagel, Otto; Sander, Bruno; Bonitz, Eckhard; Scherling, Kurt; Zettler, Hans D.; Stoehr, Dieter; and Berbner, Heinz, 4,219,512, Cl. 264-11.000.

Zieber, George M., Jr.: *See*—
Ion, John C.; Zieber, George M., Jr.; and Loewenstern, Stanley L., 4,218,935, Cl. 74-501.00R.

Ziegler, George M., Jr.: *See*—
Kadan, Ranjit S.; Ziegler, George M., Jr.; and Spadaro, James J., 4,219,469, Cl. 260-123.500.

Ziering, Albert: *See*—
Berger, Leo; Plati, John T.; and Ziering, Albert, 4,219,657, Cl. 549-43.000.

Zimlich, Josef: *See*—
Rech, Werner; Welsch, Wolfgang; and Zimlich, Josef, 4,219,757, Cl. 313-220.000.

Zimmerer, Arthur L., deceased (by Zimmerer, Bernadette, joint executor); by First National Bank and Trust Co., joint executor; Siekmeier, David A.; Andersen, Glen L.; and Meis, Charles H., to Lindsay Manufacturing Company. Continuous-feed fluid supply apparatus. 4,219,043, Cl. 137-312.000.

Zimmerer, Bernadette, joint executor: *See*—
Zimmerer, Arthur L., deceased; First National Bank and Trust Co., joint executor; Siekmeier, David A.; Andersen, Glen L.; and Meis, Charles H., 4,219,043, Cl. 137-312.000.

Zimmerman, Dennis M.; and Marshall, Winston S., to Eli Lilly and Company. N-Methyl and N-phenethyl-cis-decahydroisoquinolines. 4,219,652, Cl. 546-144.000.

Zimmermann, Josef, to Hoechst Aktiengesellschaft. Hinge joint. 4,218,809, Cl. 16-178.000.

Zippel, Herbert, to Herbert Zippel GmbH & Co. KG. Identification carrier. 4,218,838, Cl. 40-359.000.

Zolffel, Michael: *See*—
Obenaus, Fritz; Droste, Wilhelm; Streubel, Wolf; Zolffel, Michael; and Muller, Wolfgang, 4,219,678, Cl. 568-697.000.

Zubik, Maria I.: *See*—
Tokar, Vladimir A.; Zubik, Maria I.; Baklanov, Grigory M.; Matygin, Nikolai F.; Ustinov, Valentin S.; Kolesnikov, Anatoly V.; Gashenko, Stanislav I.; Rogatkin, Alexandr A.; Khiopkov, Leonid P.; Mikheeva, Vera I.; Lekalova, Lidia I.; Drepin, Nikolai F.; Feofanov, Lev P.; Khodotova, Nina E.; Shevchenko, Ivan I.; Telina, Larisa A.; Garmash, Vladimir I.; and Frantsevich, Andrei M., 4,219,363, Cl. 106-100.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 26TH DAY OF AUGUST, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

American Cyanamid Company: *See*—
Hillard, Ray L.; and Hardy, William B., Re. 30,385, Cl. 260-45.80N.

Brandt, Jean; Giddey, Claude; and Bunter, Guy, to Etablissements V.Q. Petersen & Cie. Method of reducing the aflatoxin contact of oilseed meal products. Re. 30,386, Cl. 426-335.000.

Bunter, Guy: *See*—
Brandt, Jean; Giddey, Claude; and Bunter, Guy, Re. 30,386, Cl. 426-335.000.

Davis, Thomas E.: *See*—
Denniston, Rollin H., III; and Davis, Thomas E., Re. 30,387, Cl. 128-419.00D.

Denniston, Rollin H., III; and Davis, Thomas E., to Medtronic, Inc. Automatic cardioverting circuit. Re. 30,387, Cl. 128-419.00D.

Etablissements V.Q. Petersen & Cie: *See*—
Brandt, Jean; Giddey, Claude; and Bunter, Guy, Re. 30,386, Cl. 426-335.000.

Frank, Robert I.: *See*—
Kaplow, Roy; and Frank, Robert I., Re. 30,383, Cl. 136-89.0MS.
Kaplow, Roy; and Frank, Robert I., Re. 30,384, Cl. 136-89.0PC.

Giddey, Claude: *See*—
Brandt, Jean; Giddey, Claude; and Bunter, Guy, Re. 30,386, Cl. 426-335.000.

Hardy, William B.: *See*—
Hillard, Ray L.; and Hardy, William B., Re. 30,385, Cl. 260-45.80N.

Hillard, Ray L.; and Hardy, William B., to American Cyanamid Company. Light and heat stabilizers for polyolefins. Re. 30,385, Cl. 260-45.80N.

Kaplow, Roy; and Frank, Robert I., to Massachusetts Institute of Technology. High-intensity, solid-state-solar cell device. Re. 30,383, Cl. 136-89.0MS.

Kaplow, Roy; and Frank, Robert I., to Massachusetts Institute of Technology. Solar cell. Re. 30,384, Cl. 136-89.0PC.

Mandell, Ronald D., to Sta-Rite Industries, Inc. Assembly for sealing and pressure equalization of a submersible housing. Re. 30,382, Cl. 138-89.000.

Massachusetts Institute of Technology: *See*—
Kaplow, Roy; and Frank, Robert I., Re. 30,383, Cl. 136-89.0MS.
Kaplow, Roy; and Frank, Robert I., Re. 30,384, Cl. 136-89.0PC.

Medtronic, Inc.: *See*—
Denniston, Rollin H., III; and Davis, Thomas E., Re. 30,387, Cl. 128-419.00D.

Ries, Donald L., to Rockwell International Corporation. Flexible rotary coupling. Re. 30,381, Cl. 105-131.000.

Rockwell International Corporation: *See*—
Ries, Donald L., Re. 30,381, Cl. 105-131.000.

Shrum, Lorne R. Mold for continuous casting of metal. Re. 30,380, Cl. 72-56.000.

Sta-Rite Industries, Inc.: *See*—
Mandell, Ronald D., Re. 30,382, Cl. 138-89.000.

LIST OF PLANT PATENTEES

Pan-American Plant Company: *See*—
van der Knaap, J. C. M., 4,589, Cl. 80.000.

van der Knaap, J. C. M., to Pan-American Plant Company. Chrysanthemum named Westland. 4,589, 8-26-80, Cl. 80.000.

LIST OF DESIGN PATENTEES

Adelson, Hilda A. Stuffed toy. 256,602, 8-26-80, Cl. D21-162.000.

Alessio, Lorenzo E., to Black & Decker Inc. Portable workbench. 256,533, 8-26-80, Cl. D6-178.000.

American Tourister, Inc.: *See*—
Koffler, Sol, 256,550, Cl. D8-317.000.

Aoba Shigyo Company, Limited: *See*—
Ikushima, Yoshitaka; and Ozawa, Isao, 256,557, Cl. D9-219.000.

Armco Inc.: *See*—
Madsen, Jens H., 256,620, Cl. D25-74.000.

Artistic Woodwork Co. Ltd.: *See*—
Vihma, Johannes, 256,619, Cl. D25-74.000.

Arzoian, Brian H. Surfing handboard for aquatic activities. 256,604, 8-26-80, Cl. D21-236.000.

Atkins, Reginald C., to Spantape Services Limited. Curtain pleating tape. 256,536, 8-26-80, Cl. D6-208.100.

Aulenti, Gae, to Knoll International, Inc. Table. 256,532, 8-26-80, Cl. D6-177.000.

B & B Miniatures: *See*—
Nye, LaVonne, 256,586, Cl. D15-66.000.

Baker, Michael: *See*—
Tuggle, Lloyd H.; and Baker, Michael, 256,584, Cl. D15-1.000.

Bartin, Jean-Jacques. Electrical extension cord. 256,581, 8-26-80, Cl. D13-24.000.

Beaird-Poulan Division of Emerson Electric Co.: *See*—
Tuggle, Lloyd H.; and Baker, Michael, 256,584, Cl. D15-1.000.

Beaver, Ted L., to Demert & Dougherty, Inc. Bottle or similar article. 256,554, 8-26-80, Cl. D9-68.000.

Beeman, Everett C., to Monsanto Company. Bottle or similar article. 256,555, 8-26-80, Cl. D9-116.000.

Belkir, Marcel. Portable shower. 256,610, 8-26-80, Cl. D23-57.000.

Bergkvist, Lars A. Plane measuring instrument. 256,565, 8-26-80, Cl. D10-69.000.

Berkley and Company, Inc.: *See*—
Oberg, Gary R.; and Rumbaugh, James T., 256,578, Cl. D12-215.000.

Bishop, Kenneth H. Combined holder and carrier for roller skates. 256,521, 8-26-80, Cl. D3-36.000.

Black & Decker Inc.: *See*—
Alessio, Lorenzo E., 256,533, Cl. D6-178.000.

Bowman, George E.: *See*—
Skyer, Robert A.; and Bowman, George E., 256,585, Cl. D15-31.000.

Breinholt, Eugene E. Motor home. 256,573, 8-26-80, Cl. D12-100.000.

Bugos, Jon W. Modular record rack. 256,534, 8-26-80, Cl. D6-185.000.

Carlin, Jack M. Fire hydrant valve. 256,607, 8-26-80, Cl. D23-19.000.

Carrillo, Alexander. Magnetic bingo chip sweeper. 256,595, 8-26-80, Cl. D21-48.000.

Carson, Marjorie A. Toy animal figure. 256,598, 8-26-80, Cl. D21-148.000.

Chrysler Corporation: *See*—
Moore, Michael G., 256,575, Cl. D12-174.000.

Clemens, Anton H., to Miles Laboratories, Inc. Double lumen catheter insert. 256,617, 8-26-80, Cl. D24-54.000.

Contempo Campers, Inc.: *See*—
Klein, Miles, 256,618, Cl. D25-69.000.

Contempo Metal Furniture Co. of Calif.: *See*—
Schuster, Louis, 256,525, Cl. D6-69.000.

Conti, Carmine. Newspaper burning grate. 256,540, 8-26-80, Cl. D7-207.000.

Cooper, Marvin, to Dynamic Classics, Ltd. Direction and temperature indicator case and mount therefor. 256,562, 8-26-80, Cl. D10-53.000.

Corby, Karl W.; Ogden, William H., III; and London, Harold. Live bait well. 256,605, 8-26-80, Cl. D22-22.000.

Cross, Raymond E., to Federal Research Corporation. Desk clock. 256,559, 8-26-80, Cl. D10-22.000.

D'Aguanno, Steven R., to Hasbro Industries, Inc. Toy hippopotamus. 256,599, 8-26-80, Cl. D21-157.000.

Davies, Peter O., to Tullen Industries Limited. Cutting tool. 256,541, 8-26-80, Cl. D8-5.000.

DeBose, Errol A. Percussion musical instrument. 256,591, 8-26-80, Cl. D17-22.000.
Demert & Dougherty, Inc.: *See—*
Beaver, Ted L., 256,554, Cl. D9-68.000.
DiCarlo, Elinor C.: *See—*
DiCarlo, Joseph B.; and DiCarlo, Elinor C., 256,520, Cl. D3-36.000.
DiCarlo, Joseph B.; and DiCarlo, Elinor C. Ski carrier. 256,520, 8-26-80, Cl. D3-36.000.
Dillon, Ronald L. Floor slat for hog confinement facilities or similar article. 256,621, 8-26-80, Cl. D25-75.000.
Di Marchi, Silvio J.: *See—*
Goldman, Marvin A.; Goldman, Jerome N.; Di Marchi, Silvio J.; and Gilmore, Arthur, 256,563, Cl. D10-58.000.
Dixon, Robert A.: *See—*
Mahiques, Robert J.; and Dixon, Robert A., 256,588, Cl. D16-32.000.
Dynamic Classics, Ltd.: *See—*
Cooper, Marvin, 256,562, Cl. D10-53.000.
Elliott, Robert V. Cleated shoe cleaning device. 256,524, 8-26-80, Cl. D4-22.000.
Enco Die Casting Co.: *See—*
Nadle, Edward A., 256,542, Cl. D8-13.000.
Ernest, Jasper H. Polishing buff for jewelry. 256,538, 8-26-80, Cl. D7-161.000.
Faul, Thomas L., to Universal Fonts Inc. Film font clip for use in securing a flexible font to a character drum. 256,592, 8-26-80, Cl. D18-22.000.
Fayle, Paul R. Screw lock assembly. 256,553, 8-26-80, Cl. D8-387.000.
Federal Research Corporation: *See—*
Cross, Raymond E., 256,559, Cl. D10-22.000.
Felo-Werkzeugfabrik: *See—*
Holland-Letz, Horst W., 256,546, Cl. D8-83.000.
Holland-Letz, Horst W., 256,547, Cl. D8-83.000.
Fish, Darrell D., to Universal Security Instruments, Inc. Automobile alarm package. 256,556, 8-26-80, Cl. D9-193.000.
FM Musical Instruments, Inc.: *See—*
Orlandoni, Franco, 256,590, Cl. D17-4.000.
Gariety, Harold L. Wall plaque. 256,571, 8-26-80, Cl. D11-140.000.
George, William. Canning lid lifter. 256,543, 8-26-80, Cl. D8-40.000.
Geyer, Hennoch, to Trak Incorporated. Ski. 256,603, 8-26-80, Cl. D21-229.000.
Gilmore, Arthur: *See—*
Goldman, Marvin A.; Goldman, Jerome N.; Di Marchi, Silvio J.; and Gilmore, Arthur, 256,563, Cl. D10-58.000.
Goldman, Jerome N.: *See—*
Goldman, Marvin A.; Goldman, Jerome N.; Di Marchi, Silvio J.; and Gilmore, Arthur, 256,563, Cl. D10-58.000.
Goldman, Marvin A.; Goldman, Jerome N.; Di Marchi, Silvio J.; and Gilmore, Arthur, to Penn-Plax Plastics, Inc. Magnetic aquarium thermometer. 256,563, 8-26-80, Cl. D10-58.000.
Greenwald, William: *See—*
Knight, Carl W.; Hart, Richard G.; and Greenwald, William, 256,612, Cl. D23-95.000.
Grunstad, Jerome A., to Ketcham & McDougall, Inc. Letter opener. 256,548, 8-26-80, Cl. D8-102.000.
Guetat, Paul, to Societe Majalone du Meuble S.A. of Meyzieu. Bed. 256,527, 8-26-80, Cl. D6-83.000.
Hart, Richard G.: *See—*
Knight, Carl W.; Hart, Richard G.; and Greenwald, William, 256,612, Cl. D23-95.000.
Hasbro Industries, Inc.: *See—*
D'Aguanno, Steven R., 256,599, Cl. D21-157.000.
Zacherle, Bonnie D., 256,600, Cl. D21-157.000.
Zacherle, Bonnie D., 256,601, Cl. D21-160.000.
Herron, Jack R. Bubble-making toy for bicycles. 256,596, 8-26-80, Cl. D21-61.000.
Hilker, Gloria D. Portable fireplace. 256,613, 8-26-80, Cl. D23-97.000.
Hintze, Grant F. Washer spin tube puller. 256,544, 8-26-80, Cl. D8-51.000.
Hirsch, Ira J. Baseball glove. 256,519, 8-26-80, Cl. D2-361.000.
Hoggard, Anthony J., to Tomar Corporation. Arrowhead remover. 256,606, 8-26-80, Cl. D22-99.000.
Holland-Letz, Horst W., to Felo-Werkzeugfabrik. Screwdriver handle. 256,546, 8-26-80, Cl. D8-83.000.
Holland-Letz, Horst W., to Felo-Werkzeugfabrik. Screwdriver handle. 256,547, 8-26-80, Cl. D8-83.000.
Holstine, Patricia I. Toy skunk. 256,597, 8-26-80, Cl. D21-148.000.
Honeycutt, Frances H. Transparent rain bonnet or the like. 256,515, 8-26-80, Cl. D2-235.000.
Hoyt, Joseph N. Combined ceiling fan cover plate and blade connectors. 256,614, 8-26-80, Cl. D23-163.000.
Ichikawa Press Industries Co., Ltd.: *See—*
Osawa, Mitsuyoshi, 256,622, Cl. D26-45.000.
Ikushima, Yoshitaka; and Ozawa, Isao, to Aoba Shigyo Company, Limited; and Mizuno Shigyo Company, Limited. Packaging container. 256,557, 8-26-80, Cl. D9-219.000.
International Harvester Company: *See—*
Skyer, Robert A.; and Bowman, George E., 256,585, Cl. D15-31.000.
Iwashita, Masahiro. Magnifying viewer. 256,589, 8-26-80, Cl. D16-56.000.
Jedzinski, Paul F. Catamaran hull. 256,572, 8-26-80, Cl. D12-64.000.
Johns, Russell E. Strand and rod gauge. 256,564, 8-26-80, Cl. D10-64.000.
Johnson, David J., to Studio One Services, Inc. Kiosk. 256,530, 8-26-80, Cl. D6-144.000.
Johnson, Jerry. Waterbed with canopy. 256,526, 8-26-80, Cl. D6-82.000.
Joseph, Clive E. Clothes pin. 256,539, 8-26-80, Cl. D7-198.000.
Ken-Herr & Associates: *See—*
Maurin, Kenneth W., 256,549, Cl. D8-312.000.
Ketcham & McDougall, Inc.: *See—*
Grunstad, Jerome A., 256,548, Cl. D8-102.000.
Klein, Miles, to Contempo Campers, Inc. Cover for a step. 256,618, 8-26-80, Cl. D25-69.000.
Knight, Carl W.; Hart, Richard G.; and Greenwald, William, to National Utility Products Company. Fireplace grate. 256,612, 8-26-80, Cl. D23-95.000.
Knoll International, Inc.: *See—*
Aulenti, Gae, 256,532, Cl. D6-177.000.
Koch, Byron W., to NL Industries, Inc. Bicycle wheel or similar article. 256,576, 8-26-80, Cl. D12-209.000.
Koffler, Sol, to American Tourister, Inc. Combined luggage handle and studs therefor. 256,550, 8-26-80, Cl. D8-317.000.
Kuran, Peter G. Jacket. 256,514, 8-26-80, Cl. D2-192.000.
Legerius, Bengt E.; and Lofving, Stig A., to Telefonaktiebolaget L M Ericsson. Miter plate. 256,545, 8-26-80, Cl. D8-71.000.
Legerius, Bengt E.; and Maddock, Peter L., to Telefonaktiebolaget L M Ericsson. Channel system for electric conductors. 256,579, 8-26-80, Cl. D13-13.000.
Lloyd, Ralph E. Vehicle top. 256,574, 8-26-80, Cl. D12-156.000.
Lockwood, Edward M. Pipe. 256,623, 8-26-80, Cl. D27-03.000.
Lofving, Stig A.: *See—*
Legerius, Bengt E.; and Lofving, Stig A., 256,545, Cl. D8-71.000.
London, Harold: *See—*
Corby, Karl W.; Ogden, William H., III; and London, Harold, 256,605, Cl. D22-22.000.
Maddock, Peter L.: *See—*
Legerius, Bengt E.; and Maddock, Peter L., 256,579, Cl. D13-13.000.
Madsen, Jens H., to Armco Inc. Sheet piling. 256,620, 8-26-80, Cl. D25-74.000.
Mahiques, Robert J.; and Dixon, Robert A. Cylinder mounting device for electronic scanner used in photographic reproduction. 256,588, 8-26-80, Cl. D16-32.000.
Makhobey, Walter. Flush tank valve closer float. 256,608, 8-26-80, Cl. D23-33.000.
Marshall, Anthony M. Handset for a telephone instrument. 256,583, 8-26-80, Cl. D14-63.000.
Martin, Harold E. Spinal support cushion. 256,535, 8-26-80, Cl. D6-201.000.
Massoni, Luigi; and Pelizza, Dino, to Nazareno Gabrielli S.p.A. Ball point pen. 256,593, 8-26-80, Cl. D19-49.000.
Maurin, Kenneth W., to Ken-Herr & Associates. Volume adjustment knob for power microphone. 256,549, 8-26-80, Cl. D8-312.000.
Michalak, Sylvia S., to Surgikos, Inc. Protective foot covering. 256,516, 8-26-80, Cl. D2-271.000.
Miles Laboratories, Inc.: *See—*
Clemens, Anton H., 256,617, Cl. D24-54.000.
Mizuno Shigyo Company, Limited: *See—*
Ikushima, Yoshitaka; and Ozawa, Isao, 256,557, Cl. D9-219.000.
Mochel, Paul J.: *See—*
Reppert, Merlyn R.; and Mochel, Paul J., 256,577, Cl. D12-211.000.
Moesle, Adolph H. Shoe sole. 256,518, 8-26-80, Cl. D2-320.000.
Monsanto Company: *See—*
Beeman, Everett C., 256,555, Cl. D9-116.000.
Moore, Michael G., to Chrysler Corporation. Steering column mountable control stalk. 256,575, 8-26-80, Cl. D12-174.000.
Muramatsu, Keizo. Wrist watch. 256,561, 8-26-80, Cl. D10-39.000.
Nadle, Edward A., to Enco Die Casting Co. Cultivator fork. 256,542, 8-26-80, Cl. D8-13.000.
National Utility Products Company: *See—*
Knight, Carl W.; Hart, Richard G.; and Greenwald, William, 256,612, Cl. D23-95.000.
Nazareno Gabrielli S.p.A.: *See—*
Massoni, Luigi; and Pelizza, Dino, 256,593, Cl. D19-49.000.
NL Industries, Inc.: *See—*
Koch, Byron W., 256,576, Cl. D12-209.000.
North American Philips Corporation: *See—*
Rakocy, William J.; and Tsuji, Masao, 256,537, Cl. D7-94.000.
Nowak, Manfred: *See—*
Voss, Cay-Peter; and Nowak, Manfred, 256,567, Cl. D10-81.000.
Nye, LaVonne, to B & B Miniatures. Cloth pleater. 256,586, 8-26-80, Cl. D15-66.000.
Oberg, Gary R.; and Rumbaugh, James T., to Berkley and Company, Inc. Fillable anchor. 256,578, 8-26-80, Cl. D12-215.000.
Ogden, William H., III: *See—*
Corby, Karl W.; Ogden, William H., III; and London, Harold, 256,605, Cl. D22-22.000.
Orlandoni, Franco, to FM Musical Instruments, Inc. Keyboard for electronic accordion. 256,590, 8-26-80, Cl. D17-4.000.
Ormond, William. Collapsible holder for a container. 256,528, 8-26-80, Cl. D6-130.000.
Osawa, Mitsuyoshi, to Ichikawa Press Industries Co., Ltd. Hand-held light. 256,622, 8-26-80, Cl. D26-45.000.
Owens, Tommie L. Combination cassette tape player, radio receiver and telephone set. 256,582, 8-26-80, Cl. D14-5.000.
Ozawa, Isao: *See—*
Ikushima, Yoshitaka; and Ozawa, Isao, 256,557, Cl. D9-219.000.
Pelizza, Dino: *See—*
Massoni, Luigi; and Pelizza, Dino, 256,593, Cl. D19-49.000.

Penn-Plax Plastics, Inc.: *See*—
Goldman, Marvin A.; Goldman, Jerome N.; Di Marchi, Silvio J.; and Gilmore, Arthur, 256,563, Cl. D10-58.000.
Peterson, Ralph E. Carrying case for chess articles or the like. 256,522, 8-26-80, Cl. D3-74.000.
Phillips Petroleum Company: *See*—
Smith, Ernest L., 256,558, Cl. D9-267.000.
Primault, Andre, to Societe Generale de Fonderie. Bidet. 256,609, 8-26-80, Cl. D23-51.000.
Primault, Andre, to Societe Generale de Fonderie. Water closet. 256,611, 8-26-80, Cl. D23-65.000.
Rakocy, William J.; and Tsuji, Masao, to North American Philips Corporation. Deep fryer. 256,537, 8-26-80, Cl. D7-94.000.
Reppert, Merlyn R.; and Mochel, Paul J., to W. R. Grace & Co. Wheel center. 256,577, 8-26-80, Cl. D12-211.000.
Rowinski, Anthony S., to U.S. Engineering Co. Inc. Wall anchor. 256,552, 8-26-80, Cl. D8-385.000.
Rumbaugh, James T.: *See*—
Oberg, Gary R.; and Rumbaugh, James T., 256,578, Cl. D12-215.000.
Ryder International Corporation: *See*—
Thomas, Michael D., 256,615, Cl. D24-9.000.
Salomon, Georges P. J. Ski boot. 256,517, 8-26-80, Cl. D2-276.000.
Sawafuji Denki Kabushiki Kaisha: *See*—
Tatsumi, Norio, 256,587, Cl. D15-83.000.
Schuster, Louis, to Contempo Metal Furniture Co. of Calif. Chair. 256,525, 8-26-80, Cl. D6-69.000.
Seymore, Doris T. Girl's jumper. 256,513, 8-26-80, Cl. D2-81.000.
Sims, Calvin E. Frozen confection. 256,512, 8-26-80, Cl. D1-18.000.
Skyer, Robert A.; and Bowman, George E., to International Harvester Company. Front end unit for a tractor. 256,585, 8-26-80, Cl. D15-31.000.
Smith, Ernest L., to Phillips Petroleum Company. Container closure or the like. 256,558, 8-26-80, Cl. D9-267.000.
Societe Generale de Fonderie: *See*—
Primault, Andre, 256,609, Cl. D23-51.000.
Primault, Andre, 256,611, Cl. D23-65.000.
Societe Majalone du Meuble S.A. of Meyzieu: *See*—
Guetat, Paul, 256,527, Cl. D6-83.000.
Spantape Services Limited: *See*—
Atkins, Reginald C., 256,536, Cl. D6-208.100.
Stuckelman, Robert M. Terminal for computer assisted ECG service. 256,616, 8-26-80, Cl. D24-17.000.
Studio One Services, Inc.: *See*—
Johnson, David J., 256,530, Cl. D6-144.000.
Surgikos, Inc.: *See*—
Michalak, Sylvia S., 256,516, Cl. D2-271.000.
Tatsumi, Norio, to Sawafuji Denki Kabushiki Kaisha. Portable electric refrigerator. 256,587, 8-26-80, Cl. D15-83.000.
Tawil, Abraham I. Carrying case for backgammon or similar article. 256,523, 8-26-80, Cl. D3-76.000.
Tawil, Abraham I. Backgammon board or similar article. 256,594, 8-26-80, Cl. D21-15.000.
Telefonaktiebolaget L M Ericsson: *See*—
Legerius, Bengt E.; and Lofving, Stig A., 256,545, Cl. D8-71.000.
Legerius, Bengt E.; and Maddock, Peter L., 256,579, Cl. D13-13.000.
Thexton Manufacturing Company: *See*—
Tichy, Brian N., 256,580, Cl. D13-24.000.
Thomas, Michael D., to Ryder International Corporation. Sterilizer unit. 256,615, 8-26-80, Cl. D24-9.000.
Tichy, Brian N., to Thexton Manufacturing Company. Adapter for use in testing an alternator or the like. 256,580, 8-26-80, Cl. D13-24.000.
Tintometer GmbH: *See*—
Voss, Cay-Peter; and Nowak, Manfred, 256,567, Cl. D10-81.000.
Tomar Corporation: *See*—
Hoggard, Anthony J., 256,606, Cl. D22-99.000.
Trak Incorporated: *See*—
Geyer, Hennoch, 256,603, Cl. D21-229.000.
Tsuji, Masao: *See*—
Rakocy, William J.; and Tsuji, Masao, 256,537, Cl. D7-94.000.
Tuggle, Lloyd H.; and Baker, Michael, to Beaird-Poulan Division of Emerson Electric Co. Power chain saw engine assembly. 256,584, 8-26-80, Cl. D15-1.000.
Tullen Industries Limited: *See*—
Davies, Peter O., 256,541, Cl. D8-5.000.
U.S. Engineering Co. Inc.: *See*—
Rowinski, Anthony S., 256,552, Cl. D8-385.000.
Universal Fonts Inc.: *See*—
Faul, Thomas L., 256,592, Cl. D18-22.000.
Universal Security Instruments, Inc.: *See*—
Fish, Darrell D., 256,556, Cl. D9-193.000.
van Eyben, Bruno N. Pendant watch. 256,560, 8-26-80, Cl. D10-30.000.
Van Koert, John O. Hanging magazine rack or the like. 256,529, 8-26-80, Cl. D6-131.000.
Van Koert, John P. Cabinet or the like. 256,531, 8-26-80, Cl. D6-167.000.
Vihma, Johannes, to Artistic Woodwork Co. Ltd. Picture frame moulding. 256,619, 8-26-80, Cl. D25-74.000.
Voss, Cay-Peter; and Nowak, Manfred, to Tintometer GmbH. Pool water tester. 256,567, 8-26-80, Cl. D10-81.000.
W. R. Grace & Co.: *See*—
Reppert, Merlyn R.; and Mochel, Paul J., 256,577, Cl. D12-211.000.
Webb, Clay M. Door locking chain. 256,551, 8-26-80, Cl. D8-340.000.
Wilson, Winthrop E.: *See*—
Zephir, Henry K.; and Wilson, Winthrop E., 256,566, Cl. D10-78.000.
Young, Lonas S. Flexible wrist band. 256,568, 8-26-80, Cl. D11-25.000.
Young, Lonas S. Flexible wrist band. 256,569, 8-26-80, Cl. D11-25.000.
Young, Lonas S. Flexible wrist band. 256,570, 8-26-80, Cl. D11-25.000.
Zacherle, Bonnie D., to Hasbro Industries, Inc. Toy alligator. 256,600, 8-26-80, Cl. D21-157.000.
Zacherle, Bonnie D., to Hasbro Industries, Inc. Toy bird. 256,601, 8-26-80, Cl. D21-160.000.
Zephir, Henry K.; and Wilson, Winthrop E. Alarm system tester. 256,566, 8-26-80, Cl. D10-78.000.

CLASSIFICATION OF PATENTS

ISSUED AUGUST 26, 1980

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

9 4,218,777
163 4,218,778
168 4,218,779
199 4,218,780
247 4,218,781

CLASS 3

1.5 4,218,782
4,218,783

CLASS 4

203 4,218,785
206 4,218,786
258 4,218,787
543 4,218,784

CLASS 5

8 4,218,793
74 R 4,218,788
201 4,218,789
247 4,218,790
284 4,218,791
436 4,218,792

CLASS 7

138 4,218,794
158 4,218,795

CLASS 8

137 4,219,333
532 4,219,332

CLASS 12

90 4,218,796
142 EV 4,218,797

CLASS 13

25 4,219,692

CLASS 15

49 R 4,218,798
77 4,218,799
88 4,218,800
100 4,218,801
104.3 R 4,218,803
104.3 SN 4,218,802
174 4,218,804
321 4,218,805
402 4,218,806

CLASS 16

86 A 4,218,807
141 4,218,808
178 4,218,809

CLASS 23

230 B 4,219,334
4,219,335
4,219,336
4,219,337

CLASS 26

16 4,218,810

CLASS 29

157.1 R 4,218,811
402.12 4,218,812
450 4,218,813
4,218,814
563 4,218,815
568 4,218,816
741 4,218,817
762 4,218,818

CLASS 30

157 4,218,819
166 R 4,218,820
254 4,218,821

CLASS 33

1 D 4,218,822
166 4,218,823
169 B 4,218,824
174 Q 4,218,825
185 R 4,218,826
318 4,218,827
334 4,218,828
348 4,218,829

CLASS 34

1 4,218,830
4 4,218,831
79 4,218,832
156 4,218,833

CLASS 35

25 4,218,834
31 R 4,218,835
35 R 4,218,836

CLASS 37

103 4,218,837

CLASS 40

359 4,218,838

CLASS 42

65 4,218,839

CLASS 43

4 4,218,840
24 4,218,841
122 4,218,842
131 4,218,843

CLASS 46

149 4,218,844
180 4,218,845
262 4,218,846

CLASS 47

59 4,218,847

CLASS 48

197 R 4,219,338

CLASS 49

503 4,218,848

CLASS 51

7 4,218,849
49 4,218,850
168 4,218,851
211 R 4,218,852
269 4,218,853
307 4,219,339
423 4,218,854
439 4,218,855

CLASS 52

90 4,218,856
94 4,218,857
165 4,218,858
194 4,218,859
484 4,218,860

CLASS 53

138 A 4,218,861
374 4,218,862
547 4,218,863

CLASS 55

41 4,219,340
179 4,219,341
222 4,219,342
378 4,219,343

CLASS 56

11.2 4,218,864
13.6 4,218,865
341 4,218,866
370 4,218,867

CLASS 57

209 4,218,868
245 4,218,869
284 4,218,870

CLASS 59

10 4,218,877

CLASS 60

39.09 R 4,218,878
39.28 R 4,218,879
278 4,218,880
325 4,218,881
413 4,218,882
427 4,218,883
431 4,218,884
456 4,218,885
486 4,218,886
550 4,218,887
632 4,218,888
676 4,218,889

CLASS 62

114 4,218,890
116 4,218,891
514 R 4,218,892
537 4,218,893

CLASS 63

13 4,218,894

CLASS 64

1 S 4,218,895
28 R 4,218,896

CLASS 65

18 4,219,344
27 4,219,345
207 4,219,346

CLASS 66

163 4,218,897

CLASS 68

12 R 4,218,898
4,218,899
205 R 4,218,900

CLASS 69

21 4,218,901

CLASS 70

55 4,218,902
107 4,218,903
134 4,218,904

CLASS 71

11 4,219,347
30 4,219,348
62 4,219,349
78 4,219,350
94 4,219,351
105 4,219,352

CLASS 72

21 4,218,905
56 Re.30,380
183 4,218,906
241 4,218,907
302 4,218,908
320 4,218,909
389 4,218,910
479 4,218,911

CLASS 73

1 E 4,218,912
45.2 4,218,913
45.5 4,218,914
359 R 4,218,916
378 4,218,917
421.5 R 4,218,918
422 4,218,920
432 HA 4,218,919
505 4,218,921
588 4,218,922
623 4,218,923
642 4,218,924
706 4,218,925
730 4,218,926
752 4,218,927
861.16 4,218,915

CLASS 74

3.52 4,218,928
61 4,218,929
216 4,218,930
422 4,218,933
473 R 4,218,934
501 R 4,218,935
512 4,218,936
513 4,218,937
710.5 4,218,938

CLASS 75

77 4,219,353
101 R 4,219,354
123 B 4,219,355
126 L 4,219,356
221 4,219,357

CLASS 81

3 R 4,218,939
63 4,218,940

CLASS 82

1 C 4,218,941
22 4,218,942

CLASS 83

304 4,218,943
345 4,218,944
436 4,218,945
636 4,218,946
762 4,218,947

CLASS 84

1.01 4,218,948
1.03 4,218,949
1.19 4,218,950
294 4,218,951
411 A 4,218,952
484 4,218,874

CLASS 85

68 4,218,953
81 4,218,954

CLASS 91

47 4,218,955
363 R 4,218,956
421 4,218,957
434 4,218,958

CLASS 92

103 SD 4,218,959
111 4,218,960
156 4,218,961

CLASS 93

84 R 4,218,962

CLASS 98

115 R 4,218,963

CLASS 99

275 4,218,964
283 4,218,965
295 4,218,966
472 4,218,967
572 4,218,968

CLASS 100

32 4,218,969
153 4,218,970

CLASS 101

35 4,218,971
177 4,218,972
181 4,218,973

CLASS 102

8 4,218,974
18 M 4,218,975
49.1 4,218,976
214 4,218,977

CLASS 104

12 4,218,978

CLASS 105

131 Re.30,381

CLASS 106

1.17 4,219,358
39.5 4,219,359
45 4,219,360
63 4,219,361
92 4,219,362
100 4,219,363
122 4,219,364
308 Q 4,219,365

CLASS 108

106 4,218,979

CLASS 110

196 4,218,980

CLASS 111

89 4,218,981

CLASS 112

158 E 4,218,982

CLASS 113

1 E 4,218,983
4,218,984

CLASS 114

23 4,218,985
165 4,218,986
245 4,218,987

CLASS 118

713 4,218,989

CLASS 119

96 4,218,990
106 4,218,991

CLASS 123

47 R 4,218,994
90.55 4,218,995
90.61 4,218,996
169 EL 4,219,001
198 E 4,219,002
210 4,219,003
256 4,218,993
263 4,218,992
335 4,218,998
352 4,218,997
357 4,219,000
546 4,218,999

CLASS 125

15 4,219,004

CLASS 126

121 4,219,005
192 4,219,006
279 4,219,007
419 4,219,008
422 4,219,009
430 4,219,010
444 4,219,011
449 4,219,012

CLASS 128

4 4,219,013
6 4,219,014
92 D 4,219,015
130 4,219,016
152 4,219,018
156 4,219,019
204.26 4,219,017
207.13 4,219,020
214 B 4,219,021
214 G 4,219,022
283 4,219,023
287 4,219,024
303.1 4,219,025
325 4,219,026
419 D Re.30,387
642 4,219,027
731 4,219,028
774 4,219,029

CLASS 131

10 A 4,219,030
10.5 4,219,031
170 A 4,219,032
261 B 4,219,033

CLASS 132

40 4,219,034
84 D 4,219,035

CLASS 134

4 4,219,366
29 4,219,367

CLASS 135

1 R 4,219,036
69 4,219,037

CLASS 136

89 MS Re.30,383
4,219,368
89 PC Re.30,384

CLASS 137

7 4,219,038
38 4,219,039
68 R 4,219,040
79 4,219,041
85 4,219,042
312 4,219,043
340 4,219,044
375 4,219,046
590 4,219,047
614.03 4,219,048
625.3 4,219,049
899.2 4,219,045

CLASS 138

89 Re.30,382
97 4,219,050
178 4,219,051

CLASS 140

140 4,219,052
147 4,219,053

CLASS 141

10 4,219,054
27 4,219,055

CLASS 144

3 D 4,219,058
3 K 4,219,057
3 P 4,219,056
34 R 4,219,059
213 4,219,060
217 4,219,061

CLASS 145

52 4,219,062
4,219,063

CLASS 148

1.5 4,219,369
9.6 4,219,370
12 F 4,219,371
133 4,219,372
187 4,219,373

CLASS 149

75 4,219,374

CLASS 151

41.75 4,219,064

CLASS 152

243 4,219,065
353 G 4,219,066

CLASS 156

136 4,219,375
209 4,219,376
330 4,219,377
502 4,219,378
653 4,219,379

CLASS 159

47 R 4,219,380

CLASS 160

133 4,219,067

CLASS 162

4 4,219,381
180 4,219,382
360 R 4,219,383

CLASS 164

316 4,219,068

CLASS 165

9 4,219,069
11 R 4,219,070
23 4,219,071
32 4,219,072
39 4,219,073
45 4,219,074
104 S 4,219,075
4,219,076
114 4,219,077
133 4,219,078
159 4,219,079
166 4,219,080

CLASS 166

241 4,219,081
273 4,219,082
300 4,219,083

CLASS 169

70 4,219,084

CLASS 171

101 4,219,085

CLASS 172

59 4,219,086

CLASS 174

135 4,219,693
156 4,219,694

CLASS 175

65 4,219,087

CLASS 176

36 C 4,219,384
40 4,219,385
78 4,219,386

CLASS 177

138 4,219,088
165 4,219,089
208 4,219,090
211 4,219,091

CLASS 179

1 G 4,219,696
1 P 4,219,695
2 A 4,219,697
5 P 4,219,698
16 AA 4,219,699
17 B 4,219,700
99 H 4,219,701
100.1 DR 4,219,702
100.3 B 4,219,704
100.3 R 4,219,703
113 4,219,705

CLASS 180

131 4,219,093
169 4,219,092
236 4,219,094

CLASS 181

104 4,219,095
113 4,219,096
120 4,219,097
4,219,098
153 4,219,099
230 4,219,100
286 4,219,101

CLASS 182

220 4,219,102

CLASS 187

8.49 4,219,103
9 R 4,219,104

CLASS 188

73.5 4,219,105
73.6 4,219,106
134 4,219,107

CLASS 191

29 R 4,219,108

CLASS 192

87.13 4,219,109

CLASS 198

355 4,219,111
380 4,219,110
449 4,219,112
774 4,219,113
780 4,219,114
781 4,219,115

CLASS 200

4 4,219,706
19 R 4,219,707
61.47 4,219,708
61.54 4,219,709
81 R 4,219,710
148 A 4,219,711
4,219,712
153 G 4,219,713
157 4,219,714

CLASS 202

182 4,219,387

CLASS 203

61 4,219,388
72 4,219,389

CLASS 204

54 R 4,219,390
67 4,219,391
72 4,219,392
78 4,219,393
98 4,219,394
180 P 4,219,396
180 R 4,219,395
192 R 4,219,397
195 M 4,219,398
195 S 4,219,399
266 4,219,400
284 4,219,401

CLASS 206

1.5 4,219,116
150 4,219,117
387 4,219,118
457 4,219,119

CLASS 208

8 LE 4,219,402
10 4,219,403
39 4,219,404
50 4,219,405
120 4,219,406
151 4,219,407

CLASS 209

5 4,219,408
13 4,219,409
143 4,219,410
213 4,219,411
399 4,219,412
521 4,219,120

CLASS 210

25 4,219,413
27 4,219,414
32 4,219,415
44 4,219,416
4,219,417
50 4,219,418
59 4,219,419
82 4,219,420
98 4,219,421
137 4,219,422
169 4,219,423
201 4,219,424
225 4,219,425
232 4,219,426
497 R 4,219,427
522 4,219,428

CLASS 212

73 4,219,122
153 4,219,121

CLASS 213

75 TC 4,219,123

CLASS 215

12 R 4,219,124

CLASS 219

10.55 F 4,219,715
10.55 R 4,219,716
61 4,219,717
69 M 4,219,718
121 EM 4,219,719
4,219,720
121 LM 4,219,721
123 4,219,722
125.1 4,219,723
243 4,219,724
272 4,219,725
383 4,219,726
384 4,219,727
421 4,219,728

CLASS 220

5 A 4,219,125
89 A 4,219,126
269 4,219,127
453 4,219,128

CLASS 221

63 4,219,129
202 4,219,130

CLASS 222

1 4,219,131
16 4,219,132
39 4,219,133
129.3 4,219,134
402.13 4,219,135
450 4,219,136
462 4,219,137
534 4,219,138
590 4,219,139

CLASS 223

87 4,219,140

CLASS 224

273 4,219,141
324 4,219,142

CLASS 228

159 4,219,143

CLASS 229

2.5 R 4,219,144
8 4,219,145
15 4,219,146
27 4,219,147
28 R 4,219,148
37 R 4,219,149
44 CB 4,219,150

CLASS 235

379 4,219,151
463 4,219,152

CLASS 238

10 E 4,219,153

CLASS 239

91 4,219,154
124 4,219,155
265.35 4,219,156
296 4,219,157
305 4,219,158
343 4,219,159
447 4,219,160
523 4,219,161
583 4,219,162
662 4,219,163

CLASS 241

5 4,219,164
93 4,219,165
246 4,219,166

CLASS 242

55.19 A 4,219,167
56.2 4,219,168
192 4,219,169

CLASS 244

3.14 4,219,170
161 4,219,171

CLASS 248

27.3 4,219,172
56 4,219,173
71 4,219,174
125 4,219,175
188.1 4,219,176
215 4,219,177
314 4,219,178
488 4,219,179

CLASS 249

219 R 4,219,180

CLASS 250

203 R 4,219,729
305 4,219,730
310 4,219,731
396 ML 4,219,732
445 T 4,219,733
4,219,734
507 4,219,735
557 4,219,736
570 4,219,737

CLASS 251

30 4,219,181
58 4,219,182
159 4,219,183
297 4,219,184
308 4,219,185

CLASS 252

8.55 C 4,219,429
33.4 4,219,431
42.7 4,219,430
51.5 A 4,219,432
75 4,219,433
78.1 4,219,434
90 4,219,435
135 4,219,436
174.21 4,219,437
301.35 4,219,438
316 4,219,439
408 4,219,440
412 4,219,441
417 4,219,442
425.3 4,219,443
435 4,219,444
443 4,219,445
453 4,219,446
466 PT 4,219,447
500 4,219,448
522 R 4,219,449
4,219,450
4,219,451

CLASS 254

9 C 4,219,186
28 4,219,187

CLASS 260

3 4,219,452
23 H 4,219,453
29.6 T 4,219,454
29.6 WA 4,219,455
33.4 R 4,219,456
38 4,219,457
40 P 4,219,461
40 R 4,219,458
4,219,459
4,219,460
45.75 B 4,219,466
45.8 N Re.30,385
4,219,463
4,219,464
45.8 NT 4,219,465
112 R 4,219,467
112.5 R 4,219,468
123.5 4,219,469
4,219,470
124 R 4,219,471
145 B 4,219,472
151 4,219,473
156 4,219,474
158 4,219,475
192 4,219,476
239.1 4,219,477
239.3 P 4,219,478
245.2 R 4,219,462
304 4,219,562
326 C 4,219,481
345.7 P 4,219,483
346.75 4,219,484
347.7 4,219,485
4,219,486
4,219,487
397.1 4,219,488
397.3 4,219,489
439 CY 4,219,490
448 AD 4,219,491
449.5 4,219,492
456 A 4,219,493
4,219,494
456 P 4,219,495
464 4,219,496
501.14 4,219,497
513 N 4,219,498
543 R 4,219,499
561 R 4,219,500
562 A 4,219,501
578 4,219,502
4,219,503
936 4,219,510
973 4,219,511

CLASS 264

11 4,219,512
32 4,219,513
37 4,219,514
4,219,515
40.7 4,219,516
49 4,219,517
66 4,219,518
82 4,219,519
129 4,219,520
141 4,219,521
173 4,219,522
206 4,219,523
216 4,219,524
296 4,219,525
520 4,219,526
540 4,219,527

CLASS 266

236 4,219,188

CLASS 267

8 R 4,219,189
65 R 4,219,190

CLASS 271

3.1 4,219,191
160 4,219,192

CLASS 272

94 4,219,193

CLASS 273

54 B 4,219,194
110 4,219,195
126 R 4,219,196
299 4,219,197
309 4,219,200
399 4,219,198

CLASS 274

38 4,219,199

CLASS 277

53 4,219,201
93 SD 4,219,202
181 4,219,203
188 A 4,219,204
208 4,219,205

CLASS 280

21 A 4,219,207
95 R 4,219,208
278 4,219,209
401 4,219,210
425 A 4,219,211
460 A 4,219,212
475 4,219,213
605 4,219,214
615 4,219,215
4,219,216
629 4,219,217
770 4,219,218
817 4,219,206

CLASS 282

27.5 4,219,219
4,219,220

CLASS 285

3 4,219,221
8 4,219,222
26 4,219,223
47 4,219,224
4,219,225
354 4,219,226

CLASS 290

40 R 4,219,738
46 4,219,739

CLASS 292

216 4,219,227

CLASS 294

81 SF 4,219,228

CLASS 296

43 4,219,229
216 4,219,230
218 4,219,231
223 4,219,232

CLASS 297

300 4,219,233
374 4,219,234
417 4,219,235
476 4,219,236

CLASS 299

2 4,219,237
39 4,219,238
81 4,219,239

CLASS 301

5.7 4,219,240
6 CS 4,219,241

CLASS 303

6 C 4,219,242
4,219,243
92 4,219,244

CLASS 307

116 4,219,740
141 4,219,741
147 4,219,742
270 4,219,743
290 4,219,744
358 4,219,745

CLASS 308

29 4,219,245
219 4,219,246

CLASS 310

61 4,219,746
68 B 4,219,747
71 4,219,748
89 4,219,749
154 4,219,750
4,219,751
156 4,219,752
198 4,219,753
315 4,219,754
348 4,219,755
4,219,756

CLASS 312

184 4,219,247
324 4,219,248

CLASS 313

220 4,219,757

CLASS 315

3.6 4,219,758
146 4,219,759
248 4,219,760
307 4,219,761
364 4,219,762
378 4,219,763

CLASS 318

48 4,219,764
561 4,219,765
594 4,219,766
696 4,219,767

CLASS 322

8 4,219,768
28 4,219,769

CLASS 324

58 A 4,219,770
158 P 4,219,771
216 4,219,772
221 4,219,773
262 4,219,774
313 4,219,775
323 4,219,776

CLASS 330

52 4,219,780
254 4,219,781
257 4,219,782

CLASS 331

1 A 4,219,783
27 4,219,784
94.5 C 4,219,786
94.5 H 4,219,785
111 4,219,787

CLASS 333

28 R 4,219,788
32 4,219,789

CLASS 335

16 4,219,790

CLASS 336

58 4,219,791
60 4,219,792

CLASS 337

228 4,219,793
292 4,219,794
296 4,219,795

CLASS 338

163 4,219,796
333 4,219,797

CLASS 339

5 R 4,219,249
15 4,219,250
17 C 4,219,251
259 R 4,219,252

CLASS 340

52 D 4,219,800
52 F 4,219,798
52 R 4,219,799
347 DA 4,219,801
552 4,219,802
595 4,219,803
600 4,219,804
631 4,219,805
632 4,219,806
664 4,219,807
756 4,219,808
785 4,219,809
853 4,219,810

CLASS 343

5 CM 4,219,811
7.3 4,219,812
7.7 4,219,813
9 R 4,219,814
12 MD 4,219,815
16 M 4,219,816
17.1 PF 4,219,817
17.1 R 4,219,818
18 B 4,219,819
113 R 4,219,821
756 4,219,820

CLASS 346

75 4,219,822
4,219,823
76 PH 4,219,824
101 4,219,825
135.1 4,219,826

CLASS 350

129 4,219,253
293 4,219,254
346 4,219,255
4,219,256

CLASS 351

1 4,219,257
16 4,219,258

CLASS 352

129 4,219,259

CLASS 354

23 D 4,219,260
4,219,261
38 4,219,262
79 4,219,263
162 4,219,264
187 4,219,265
275 4,219,266
289 4,219,267
293 4,219,268
329 4,219,269

CLASS 355

3 R 4,219,270
14 R 4,219,271
16 4,219,272
60 4,219,273

CLASS 356

244 4,219,274
350 4,219,275
4,219,276
431 4,219,277

CLASS 357

22 4,219,828
23 4,219,829
30 4,219,830
31 4,219,831
38 4,219,832
4,219,833
41 4,219,834
55 4,219,835
4,219,836
68 4,219,827

CLASS 358

21 R 4,219,838
27 4,219,839
28 4,219,840
29 4,219,841
31 4,219,842
60 4,219,843
105 4,219,845

106 4,219,844
112 4,219,846
126 4,219,847
128.5 4,219,848
197 4,219,849
285 4,219,850

CLASS 360

40 4,219,851
90 4,219,852
103 4,219,853
123 4,219,854
125 4,219,855

CLASS 361

15 4,219,856
42 4,219,857
93 4,219,858
4,219,859
94 4,219,860
106 4,219,861
120 4,219,862
156 4,219,863
228 4,219,864
4,219,865
321 4,219,866

CLASS 362

19 4,219,867
147 4,219,868
4,219,869
226 4,219,870
264 4,219,871

CLASS 363

126 4,219,872

CLASS 364

200 4,219,873
4,219,874
4,219,875
414 4,219,876
554 4,219,877
565 4,219,878
602 4,219,879
718 4,219,880
900 4,219,881

CLASS 365

2 4,219,882
189 4,219,883

CLASS 366

4 4,219,278
35 4,219,279

CLASS 367

1 4,219,885
87 4,219,886
90 4,219,887
128 4,219,837
131 4,219,888
139 4,219,884
158 4,219,889

CLASS 368

10 4,218,876
73 4,218,875
82 4,218,872
109 4,218,871
281 4,218,873

CLASS 375

98 4,219,890

CLASS 400

124 4,219,280
126 4,219,281

CLASS 401

57 4,219,282
129 4,219,283

CLASS 403

58 4,219,284
188 4,219,285
338 4,219,286

CLASS 404

117 4,219,287

CLASS 406

28 4,219,288
70 4,219,289
186 4,219,290

CLASS 407

31 4,219,291
63 4,219,292

CLASS 408

1 R 4,219,293

CLASS 414

46 4,219,294
242 4,219,295
273 4,219,296
276 4,219,297
409 4,219,298
412 4,219,299
420 4,219,300
592 4,219,301
635 4,219,302

CLASS 415

7 4,219,303
4,219,304
13 4,219,305
62 4,219,306
182 4,219,307

CLASS 416

43 4,219,308
80 4,219,309
146 A 4,219,310

CLASS 417

260 4,219,311
295 4,219,312

CLASS 418

2 4,219,313
24 4,219,314
61 R 4,219,315
153 4,219,316

CLASS 422

62 4,219,528
65 4,219,529
69 4,219,530
124 4,219,531
133 4,219,532
200 4,219,533

CLASS 423

235 4,219,534
328 4,219,535
393 4,219,536
569 4,219,537

CLASS 424

1 4,219,538
8 4,219,539
54 4,219,541
65 4,219,540
84 4,219,542
89 4,219,543
105 4,219,544
181 4,219,545
200 4,219,546
212 4,219,547
234 4,219,548
241 4,219,549
246 4,219,550
248.54 4,219,551
249 4,219,552
250 4,219,553
4,219,554
4,219,555
261 4,219,556
263 4,219,479
4,219,557
4,219,558
267 4,219,559
4,219,560
304 4,219,561
4,219,563
305 4,219,564
4,219,565
317 4,219,566
322 4,219,567
330 4,219,568
331 4,219,569
343 4,219,570

CLASS 425

145 4,219,317
190 4,219,318
229 4,219,319
345 4,219,320
384 4,219,321
547 4,219,322
572 4,219,323

CLASS 426

48 4,219,571
69 4,219,572
107 4,219,573
135 4,219,574
242 4,219,575
262 4,219,576
264 4,219,577
335 Re.30,386
407 4,219,578
548 4,219,579
549 4,219,580
565 4,219,581
578 4,219,582
580 4,219,583
607 4,219,584
614 4,219,585
647 4,219,586

CLASS 427

64 4,219,587
160 4,219,588
213 4,219,589
215 4,219,590
387 4,219,591
405 4,219,592

CLASS 428

15 4,219,593
18 4,219,594
40 4,219,595
41 4,219,596
105 4,219,597
161 4,219,598
195 4,219,599
196 4,219,600
222 4,219,601
244 4,219,602
246 4,219,603
307 4,219,604
361 4,219,605
386 4,219,606
411 4,219,607
4,219,608
446 4,219,609
469 4,219,610

CLASS 429

13 4,219,611
86 4,219,612
104 4,219,613

CLASS 430

38 4,219,614
140 4,219,615
152 4,219,616

CLASS 432

26 4,219,324
60 4,219,327
199 4,219,325
247 4,219,326
253 4,219,328

CLASS 433

8 4,219,617
58 4,219,329
80 4,219,618
118 4,219,619
126 4,219,330
140 4,219,331
225 4,219,620

CLASS 435

32 4,219,621
78 4,219,622

CLASS 440

113 4,218,988

CLASS 455

1 4,219,891
205 4,219,778
227 4,219,777
321 4,219,779

CLASS 474

161 4,218,932
165 4,218,931

CLASS 521

85 4,219,623
171 4,219,624

CLASS 525

5 4,219,625
23 4,219,626
89 4,219,627
166 4,219,628
167 4,219,629
243 4,219,630
398 4,219,631

CLASS 526

218 4,219,632
348 4,219,633

CLASS 528

139 4,219,634
182 4,219,635
318 4,219,636
399 4,219,637
421 4,219,638
494 4,219,639
501 4,219,640

CLASS 536

9 4,219,641
17 R 4,219,642
4,219,643
4,219,644
27 4,219,645
109 4,219,646

CLASS 542

421 4,219,647

CLASS 544

21 4,219,648
282 4,219,649

CLASS 546

11 4,219,650
70 4,219,651
144 4,219,652
322 4,219,653
342 4,219,654

CLASS 548

215 4,219,655
260 4,219,480

CLASS 549

43 4,219,657
52 4,219,658
64 4,219,656
68 A 4,219,482
79 4,219,659

CLASS 560

20 4,219,660
24 4,219,661
53 4,219,662
62 4,219,663
121 4,219,664
122 4,219,665
246 4,219,666
254 4,219,667

CLASS 562

469 4,219,668
486 4,219,669
546 4,219,670
548 4,219,671
583 4,219,672
602 4,219,673

CLASS 568

348 4,219,505
365 4,219,504
387 4,219,508
411 4,219,507
473 4,219,509
496 4,219,506
559 4,219,674
563 4,219,675
566 4,219,676
657 4,219,677
697 4,219,678
705 4,219,679
842 4,219,680
4,219,681
879 4,219,682
906 4,219,683
909 4,219,684
917 4,219,685

CLASS 585

24 4,219,686
267 4,219,687
361 4,219,688
425 4,219,689
467 4,219,690
532 4,219,691

CLASSIFICATION OF DESIGNS

D1— 18 256,512
D2— 81 256,513
192 256,514
235 256,515
271 256,516
276 256,517
320 256,518
361 256,519
D3— 36 256,520
256,521
74 256,522
76 256,523
D4— 22 256,524
D6— 69 256,525
82 256,526
83 256,527
130 256,528
131 256,529
144 256,530
167 256,531
177 256,532
178 256,533
185 256,534
201 256,535
208.1 256,536
D7— 94 256,537
161 256,538
198 256,539
207 256,540
D8— 5 256,541
13 256,542
40 256,543
51 256,544
71 256,545
83 256,546
256,547
102 256,548
312 256,549
317 256,550
340 256,551
385 256,552
387 256,553
D9— 68 256,554
116 256,555
193 256,556
219 256,557
267 256,558
D10— 22 256,559
30 256,560
39 256,561
53 256,562
58 256,563
64 256,564
69 256,565
78 256,566
D11— 25 256,568
256,569
256,570
140 256,571
D12— 64 256,572
100 256,573
156 256,574
174 256,575
209 256,576
211 256,577
215 256,578
D13— 13 256,579
24 256,580
256,581
D14— 5 256,582
63 256,583
D15— 1 256,584
31 256,585
66 256,586
83 256,587
D16— 32 256,588
56 256,589
D17— 4 256,590
22 256,591
D18— 256,592
D19— 49 256,593
D21— 15 256,594
48 256,595
61 256,596
148 256,597
256,598
157 256,599
256,600
160 256,601
162 256,602
229 256,603
236 256,604
D22— 22 256,605
99 256,606
D23— 19 256,607
33 256,608
51 256,609
57 256,610
65 256,611
95 256,612
97 256,613
163 256,614
D24— 9 256,615
17 256,616
54 256,617
D25— 69 256,618
74 256,619
256,620
75 256,621
D26— 45 256,622
D27— 03 256,623

CLASSIFICATION OF PLANTS

P.— 80 4,589

GEOGRAPHICAL INDEX
OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

6 : 4,218,797
4,218,829
4,218,842
4,218,846
4,218,939
4,218,999
4,219,008
4,219,023
4,219,034
4,219,053
4,219,087
4,219,114
4,219,197
4,219,237
4,219,254
4,219,276
4,219,285
4,219,411
4,219,517
4,219,547
4,219,562
4,219,583
4,219,596
4,219,699
4,219,744
4,219,766
4,219,774
9 : 4,219,192
4,219,274
4,219,483
01 : 4,218,921
4,219,078
4,219,370
4,219,513
4,219,585
04 : 4,219,298
4,219,782
4,219,815
4,219,851
4,219,875
4,219,881
05 : 4,218,973
4,219,175
06 : 4,218,778
4,218,784
4,218,824
4,218,849
4,218,859
4,218,891
4,218,892
4,218,903
4,218,904
4,218,941
4,218,951
4,218,967
4,218,983
4,218,984
4,218,988
4,219,011
4,219,017
4,219,018
4,219,027
4,219,040
4,219,045
4,219,064
4,219,107
4,219,169
4,219,177
4,219,203
4,219,207
4,219,218
4,219,259
4,219,275
4,219,308
4,219,309
4,219,333
4,219,343
4,219,347
4,219,362
4,219,364
4,219,395
4,219,397
4,219,419
4,219,430
4,219,448
4,219,468
4,219,489
4,219,536
4,219,563
4,219,565
4,219,572
4,219,582
4,219,613
4,219,619
4,219,655
4,219,658
4,219,673
4,219,695
4,219,698
4,219,710
4,219,715
4,219,729
4,219,738
4,219,745
4,219,755
4,219,758
4,219,759
4,219,776
4,219,777
4,219,785
4,219,786
4,219,797
4,219,811
4,219,817
4,219,820
4,219,830
4,219,834
4,219,835
4,219,850
4,219,853
4,219,854
4,219,855
4,219,859
4,219,880
4,219,885
4,219,887
4,219,888
08 : Re.30,387
4,218,932
4,218,940
4,218,962
09 : Re.30,384
4,218,950
4,219,127
4,219,191
4,219,251
4,219,580
4,219,611
4,219,624
4,219,722
4,219,809
4,219,838
4,219,889
10 : 4,219,335
4,219,509
4,219,632
11 : 4,218,975
4,218,977
12 : 4,218,786
4,218,847
4,218,852
4,218,856
4,218,900
4,218,986
4,219,072
4,219,084
4,219,088
4,219,099
4,219,159
4,219,180
4,219,214
4,219,257
4,219,287
4,219,340
4,219,415
4,219,440
4,219,490
4,219,543
4,219,592
4,219,594
4,219,871
4,219,884
13 : 4,218,968
4,219,076
4,219,702
16 : 4,219,206
4,219,208
17 : 4,218,795
4,218,796
4,218,803
4,218,843
4,218,848
4,218,909
4,218,916
4,218,949
4,218,957
4,218,965
4,218,966
4,219,019
4,219,022
4,219,024
4,219,026
4,219,028
4,219,029
4,219,054
4,219,117
4,219,119
4,219,135
4,219,140
4,219,147
4,219,167
4,219,168
4,219,176
4,219,195
4,219,198
4,219,205
4,219,253
4,219,283
4,219,330
4,219,416
4,219,417
4,219,442
4,219,452
4,219,485
4,219,486
4,219,487
4,219,497
4,219,521
4,219,568
4,219,574
4,219,578
4,219,579
4,219,633
4,219,642
4,219,643
4,219,644
4,219,647
4,219,684
4,219,697
4,219,741
4,219,801
4,219,840
18 : 4,219,313
4,219,557
4,219,631
4,219,652
4,219,692
4,219,693
4,219,842
4,219,868
4,219,869
19 : 4,218,934
4,218,936
4,219,012
4,219,132
4,219,212
4,219,818
20 : 4,219,821
4,219,878
21 : 4,218,790
4,219,146
4,219,196
4,219,221
4,219,233
4,219,690
4,219,823
22 : 4,219,058
4,219,059
4,219,238
4,219,303
4,219,348
4,219,353
4,219,367
4,219,382
4,219,447
4,219,469
23 : 4,219,186
24 : 4,219,171
4,219,324
4,219,374
4,219,409
4,219,542
4,219,770
4,219,775
4,219,800
25 : Re.30,383
4,218,781
4,218,839
4,218,851
4,218,875
4,218,888
4,218,953
4,219,009
4,219,042
4,219,091
4,219,224
4,219,299
4,219,443
4,219,458
4,219,459
4,219,460
4,219,539
4,219,599
4,219,789
4,219,795
4,219,799
4,219,806
4,219,813
4,219,857
4,219,866
4,219,870
26 : Re.30,381
4,218,785
4,218,798
4,218,800
4,218,811
4,218,815
4,218,840
4,218,899
4,218,926
4,218,942
4,219,046
4,219,104
4,219,111
4,219,136
4,219,149
4,219,155
4,219,184

4,219,187
4,219,194
4,219,229
4,219,234
4,219,246
4,219,291
4,219,293
4,219,387
4,219,401
4,219,410
4,219,502
4,219,503
4,219,519
4,219,569
4,219,630
4,219,641
4,219,662
4,219,706
4,219,709
4,219,725
4,219,737
27 : 4,218,780
4,218,801
4,218,928
4,219,101
4,219,121
4,219,314
4,219,377
4,219,501
4,219,573
4,219,736
4,219,773
4,219,872
28 : 4,219,193
29 : 4,218,879
4,219,004
4,219,047
4,219,115
4,219,148
4,219,170
4,219,244
4,219,245
4,219,349
4,219,351
4,219,437
4,219,510
4,219,538
4,219,545
30 : 4,219,213
31 : 4,219,043
4,219,055
4,219,301
32 : 4,219,021
4,219,278
4,219,739
33 : 4,219,189
34 : Re.30,385
4,218,806
4,218,814
4,218,947

4,218,971
4,218,974
4,218,987
4,219,036
4,219,062
4,219,063
4,219,116
4,219,350
4,219,355
4,219,376
4,219,402
4,219,404
4,219,406
4,219,407
4,219,431
4,219,432
4,219,438
4,219,446
4,219,451
4,219,454
4,219,461
4,219,462
4,219,488
4,219,506
4,219,525
4,219,537
4,219,540
4,219,544
4,219,560
4,219,567
4,219,600
4,219,602
4,219,625
4,219,635
4,219,646
4,219,657
4,219,660
4,219,664
4,219,685
4,219,701
4,219,721
4,219,787
4,219,788
4,219,812
4,219,814
4,219,826
4,219,848
4,219,858
4,219,860
4,219,865
35 : 4,218,893
4,218,924
4,219,705
36 : 4,218,777
4,218,818
4,218,820
4,218,841
4,218,890
4,218,902
4,218,927

4,218,963
4,219,020
4,219,025
4,219,032
4,219,050
4,219,069
4,219,073
4,219,128
4,219,129
4,219,139
4,219,142
4,219,154
4,219,216
4,219,263
4,219,270
4,219,305
4,219,328
4,219,329
4,219,331
4,219,344
4,219,361
4,219,396
4,219,450
4,219,464
4,219,476
4,219,495
4,219,496
4,219,516
4,219,518
4,219,520
4,219,523
4,219,527
4,219,529
4,219,530
4,219,532
4,219,550
4,219,614
4,219,617
4,219,629
4,219,654
4,219,656
4,219,668
4,219,675
4,219,676
4,219,703
4,219,716
4,219,760
4,219,784
4,219,804
4,219,833
4,219,837
4,219,845
4,219,891
37 : 4,218,793
4,218,810
4,218,813
4,218,964
4,219,005
4,219,030
4,219,057

4,219,061
4,219,094
4,219,152
4,219,160
4,219,288
4,219,300
4,219,621
39 : 4,218,802
4,218,884
4,218,907
4,218,922
4,219,016
4,219,044
4,219,100
4,219,103
4,219,124
4,219,125
4,219,131
4,219,302
4,219,322
4,219,323
4,219,326
4,219,345
4,219,375
4,219,394
4,219,484
4,219,515
4,219,524
4,219,548
4,219,627
4,219,637
4,219,648
4,219,687
4,219,822
40 : 4,218,877
4,218,979
4,218,981
4,218,990
4,219,049
4,219,081
4,219,279
4,219,445
4,219,607
4,219,639
4,219,682
4,219,683
4,219,689
41 : 4,218,832
4,218,991
4,219,007
4,219,372
4,219,575
4,219,767
42 : 4,218,837
4,218,853
4,218,866
4,218,878
4,218,889
4,218,910
4,218,913

4,218,920
4,218,925
4,218,929
4,218,935
4,219,041
4,219,052
4,219,089
4,219,113
4,219,164
4,219,185
4,219,201
4,219,226
4,219,266
4,219,277
4,219,316
4,219,325
4,219,352
4,219,357
4,219,366
4,219,391
4,219,414
4,219,423
4,219,470
4,219,474
4,219,588
4,219,679
4,219,711
4,219,712
4,219,713
4,219,726
4,219,742
4,219,746
4,219,772
4,219,791
4,219,805
4,219,861
44 : 4,218,894
4,219,138
4,219,480
4,219,879
45 : 4,218,855
4,218,868
4,218,869
4,218,870
4,218,911
4,219,037
4,219,455
4,219,749
47 : 4,218,819
4,218,993
4,219,475
4,219,628
4,219,640
4,219,728
48 : 4,218,845
4,218,923
4,218,945
4,218,994
4,219,039

4,219,082
4,219,083
4,219,096
4,219,097
4,219,098
4,219,141
4,219,165
4,219,204
4,219,223
4,219,290
4,219,311
4,219,338
4,219,379
4,219,429
4,219,444
4,219,534
4,219,586
4,219,638
4,219,671
4,219,708
4,219,761
4,219,771
4,219,807
4,219,810
4,219,836
49 : 4,218,807
4,218,901
4,219,342
51 : 4,218,787
4,218,831
4,218,912
4,218,985
4,219,031
4,219,158
4,219,762
53 : 4,218,908
4,219,090
4,219,386
4,219,704
4,219,740
4,219,763
4,219,886
54 : 4,218,881
55 : Re.30,382
4,218,788
4,218,863
4,218,917
4,218,919
4,218,955
4,219,130
4,219,133
4,219,137
4,219,145
4,219,209
4,219,235
4,219,337
4,219,378
4,219,471
4,219,531

DESIGN PATENTS

6 : 256,514
256,520
256,521
256,52*
256,524
256,525
256,526
256,542
256,544
256,616
256,618
01 : 256,615
04 : 256,551
256,568

256,569
256,570
06 : 256,564
256,577
256,596
256,604
256,607
256,623
08 : 256,571
256,608
09 : 256,555
12 : 256,538
256,605
256,614

13 : 256,512
256,574
17 : 256,513
256,554
256,559
256,585
256,586
256,598
18 : 256,617
19 : 256,578
256,621
22 : 256,584
256,591
24 : 256,556

25 : 256,566
256,600
256,601
26 : 256,530
256,549
256,552
256,575
256,595
256,606
27 : 256,548
256,580
256,613
29 : 256,558
30 : 256,597

32 : 256,543
34 : 256,516
256,519
256,537
256,540
256,590
36 : 256,518
256,523
256,529
256,531
256,562
256,563
256,588

256,594
256,610
37 : 256,515
39 : 256,534
256,576
256,612
42 : 256,535
44 : 256,550
256,599
48 : 256,582
256,602
49 : 256,573
51 : 256,553

U.S. GOVERNMENT PRINTING OFFICE : O—1980

CHANGE OF ADDRESS FORM

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

Mail this form to: NEW ADDRESS

Superintendent of Documents
Government Printing Office SSOM
Washington, D.C. 20402

Attach last subscription label here.

SUBSCRIPTION ORDER FORM

SUBSCRIPTION ORDER FORM

ENTER MY SUBSCRIPTION TO:

@ $ Domestic; @ $ Foreign.

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

☐ Remittance Enclosed (Make checks payable to Superintendent of Documents)

☐ Charge to my Deposit Account No. .....

MAIL ORDER FORM TO:
Superintendent of Documents
Government Printing Office
Washington, D.C. 20402

U.S. DEPARTMENT OF COMMERCE
Philip M. Klutznick, *Secretary*

PATENT AND TRADEMARK OFFICE
Sidney A. Diamond, *Commissioner*